# DOCUMENT RESUME

ED 477 547 CG 032 280

| | |
|---|---|
| AUTHOR | McCutcheon, Lynn E., Ed. |
| TITLE | North American Journal of Psychology, 2003. |
| PUB DATE | 2003-00-00 |
| NOTE | 330p. |
| AVAILABLE FROM | NAJP, 240 Harbor Dr., Winter Garden, FL 34787 ($30 per annual subscription). Tel: 407-877-8364; Web site: http://najp.8m.com. |
| PUB TYPE | Collected Works - Serials (022) |
| JOURNAL CIT | North American Journal of Psychology; v5 2003 |
| EDRS PRICE | EDRS Price MF01/PC14 Plus Postage. |
| DESCRIPTORS | *Psychology; *Research Tools; *Scholarly Journals; *Social Science Research |

ABSTRACT

"North American Journal of Psychology" publishes scientific papers of general interest to psychologists and other social scientists. Articles included in volume 5 issue 1 (March 2003) are: "Mothers' Attributional Style for Events in Their Offsprings' Lives as Predictors of Their Offsprings' Cognitive Vulnerability to Depression"; "American High School Seniors' Mathematics Literacy Achievement"; "Cognitive Processing, Creativity, Apprehension and the Humorous Personality"; "Good Work: An Interview with Howard Gardner"; "Predicting Persistence among Psychology Majors at an Urban University"; "Effects of Rules on Preference for Reliable Reinforcement in a 5-Year Old Child"; "Moderating Effects of Context on the Relationship between Behavioral Diaries and Performance Rating Halo and Accuracy"; "Adolescents as Peer Data Collectors: An Exploratory Study"; "Review of Sex Differences in Vulgar Language Uses"; "Influence of Sensation Seeking on Boys' Psychosocial Adjustment"; "An Interview with Adam Blatner about Psychodrama"; and "Artistic Creativity: Personality and the Diurnal Rhythm." Articles in volume 5 issue 2 (June 2003) include: "Birth Order, Age at Menarche, and Intergenerational Context Continuity: A Comparison of Female Somatic Development in West and East Germany"; "Psychology Poster Presentations: Analysis of Characteristics and Recommendations for Improvement"; "Unrealistic Optimism and School Violence Prevention Programs"; "Interview of Donald Meichenbaum"; "A Comparison of Communication Apprehension Scores between Americans and Argentinians"; "Examining the Relationship between Need for Cognition and the Muller-Lyer Illusion"; "Analysis of Career Information in Introductory Psychology Textbooks: Methods and Findings"; "Psychological Needs and Response Bias: An Examination of Paulhus and John's Reformulation"; "The Resolution of Career Conflict Arising from Career Choice Decisions faced by Young Persons"; and "School Integration and the Achievement Test Scores of Black and White Students in Savannah, Georgia."(GCP)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 477 547

# *North American Journal of Psychology*

Volume 5
2003

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

---

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

L McCutcheon

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

BEST COPY AVAILABLE

CG032280

# *North American*
# Journal of Psychology

BEST COPY AVAILABLE

**Vol. 5, No. 1** **2003**

## Advisory Editorial Board

ADRIAN FURNHAM
Psychology
University College London

MANUEL LONDON
Psychology
SUNY, Stony Brook

DOUGLAS JACKSON
Psychology
University of Western Ontario

KAREN LYNESS
Management
Baruch College, CUNY

JAMES M. JONES
Psychology
University of Delaware

ROBERT PASNAK
Psychology
George Mason University

HEIDI KELLER
Psychology
University of Osnabrueck

RICHARD RYAN
Psychology
University of Rochester

PHILIP ZIMBARDO
Psychology
Stanford University

**Editor**
LYNN E. McCUTCHEON

## How to Subscribe to The *North American* Journal of Psychology

All subscriptions are on a calendar year basis only. If you order late in the year, the earlier issue will be sent to you. Institutional rate: $65. Individual rate: $30. Add $7 for Canadian subscriptions. Add $8 for subscriptions outside North America. *North American* Journal of Psychology is published in March, June and December.

**Now visit our website at http://najp.8m.com**

**North American Journal of Psychology**
March. 2003 ISSN 1527-7143 Vol. 5. No.1

**Mothers' Attributional Style for Events in Their Offsprings' Lives as Predictors of Their Offsprings' Cognitive Vulnerability to Depression** 1
*Shannon J. Griffith, J. M. Oliver, & B. M. Katz*

**American High School Seniors' Mathematics Literacy Achievement** 15
*James B.. Schreiber & Elisha A. Chambers*

**Cognitive Processing, Creativity, Apprehension and the Humorous Personality** 31
*Edgar B. Wycoff & Burt Pryor*

**Good Work: An Interview With Howard Gardner** 47
*Howard Gardner, Randy Seevers, & Michael F. Shaughnessy*

**Predicting Persistence Among Psychology Majors at an Urban University** 55
*Barbara S. Metzner, Joan B. Lauer, & D. W. Rajecki*

**Relationships Between U.S. Social & Economic Hard Times & Popular Motion Picture Actor Gender, Actor Age, & Movie Genre Preferences** 61
*Terry F. Pettijohn II*

**Effects of Rules on Preference for Reliable Reinforcement in a 5-year old Child** 67
*Ruth Anne Rehfeldt & Mark Chambers*

**Celebrity Worship, Cognitive Flexibility, and Why People Watch Television** 75
*MatthewM. Martin, Jacob L. Cayanus, Lynn E. McCutcheon, & John Maltby*

**Moderating Effects of Context on the Relationship Between Behavioral Diaries & Performance Rating Halo & Accuracy** 81
*Jerry Palmer, AdrianThomas, & Todd Maurer*

**Adolescents as Peer Data Collectors: An Exploratory Study** 91
*Gwendolyn J. Adam & Constance M. Wiemann*

**Review of Sex Differences in Vulgar Language Uses** 105
*Harvey J. Ginsburg, Shirley M. Ogletree, & Tammy D. Silakowski*

**Celebrity Worship and Psychological Type** 117
*Nancy McCarley & Carlos Escoto*

**Influence of Sensation Seeking on Boys' Psychosocial Adjustment** 121
*Rebecca P. Ang & Anna Woo*

**An Interview With Adam Blatner About Psychodrama** 137
*Adam Blatner & Michael F. Shaughnessy*

**Artistic Creativity: Personality and the Diurnal Rhythm** 147
*Leslie J. Francis, Micheal Fearn, & Brenda Brin Booker*

# Editor's Comments

Thanks again to all the reviewers, all of whom did a fine job of critiquing papers promptly and with great insight. Without a doubt our reviewers have made this journal what it is today. In previous issues, I recognized three reviewers by name who have done a fine job of reviewing two or more papers for NAJP. For this issue a tip of the editor's cap goes to three more reviewers, specifically Jim Thorson, Diane Ashe, and Jim Houran. Among other things, Dr. Thorson is co-author of a widely acclaimed scale designed to measure aspects of humor. Dr. Ashe is a sport psychologist and Houran has co-authored several studies in which Rasch scaling was used to great advantage.

I am sure readers will enjoy the remarks made by Howard Gardner in the interview done on behalf of NAJP by Michael Shaughnessy. There are also fascinating articles on artistic creativity (see Francis, et al), humor (see Wycoff & Pryor), and sensation seeking in adolescent boys (see Ang & Woo), to mention just a few.

I am proud to announce that NAJP is now listed in the e-psyche database, which is distributed worldwide by three distribution systems. This means even greater exposure for all authors who get their work published in NAJP.

Lynn E. McCutcheon, editor

# Mothers' Attributional Style for Events in Their Offsprings' Lives as Predictors of Their Offsprings' Cognitive Vulnerability to Depression

Shannon J. Griffith, J. M. Oliver, & B. M. Katz
*St. Louis University*

The purpose of this study was to investigate the relationship between mothers' attributional style for both events in their own lives and for events that could happen to their offspring and their offsprings' cognitive vulnerability to depression. Dyads consisting of undergraduate students and their mothers ($N = 42$) completed measures assessing attributional style, dysfunctional attitudes, depression, and anxiety. Mothers completed both a conventional measure of their own attributional style and a modified version assessing their attributional style for hypothetical negative events that could befall their offspring. Results indicated a relationship between mothers' attributional style for potential events in their offsprings' lives and their offsprings' levels of dysfunctional attitudes, although not between mothers' attributional style and their offsprings' attributional style. The relationship between mothers' attributional style for events in their offsprings' lives and offsprings' dysfunctional attitudes remained significant when both depression and anxiety were controlled statistically in both the mothers and their offspring.

The Temple-Wisconsin Cognitive Vulnerability to Depression Project recently established that cognitive vulnerability to depression predicts both future initial episodes of unipolar depression and recurrence of depression in college students (Alloy et al., 1999). Two major theories, Beck's (1967) cognitive theory of depression and the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989), provide a conceptual framework for studying cognitive vulnerability to depression. The Temple-Wisconsin Cognitive Vulnerability to Depression Project has shown that individuals possessing the cognitive vulnerability factors specified in the theories, namely negative schemas and depressogenic attributional style, are more likely than individuals without these cognitive styles both to develop an initial episode and to suffer a recurrence of episodic depression when faced with stress (Alloy et al., 1999).

---

*Author info*: Correspondence should be sent to: Dr. Joan Oliver, Psychology Dept., St. Louis University, 221 N. Grand Blvd., St. Louis, MO 63103.

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 1-14.
© NAJP

The *Dysfunctional Attitude Scale* (DAS; Weissman & Beck, 1978) is the most frequently-used way of operationalizing negative schemas in empirical studies. Schemas have been defined as "cognitive structures within the mind" that organize experience. Their specific content has been defined as "core beliefs" that are implicit, unarticulated, and unconscious (J. Beck, 1995). Dysfunctional attitudes represent core schemas that have been activated by current stressors, and are examples of intermediate beliefs (like rules or "should statements" and assumptions or conditional "if-then" expectations; J. Beck, 1995).

Attributional style can be defined as a general tendency to attribute the causes of life events in a particular way. Hopelessness theory accounts for the relationship between attributional style and psychologically-based depression generally and a particular type of psychologically-caused depression called hopelessness depression in particular. Specifically, the theory states that "the symptoms of depression are more likely to occur when negative life events are attributed to stable (i.e., enduring) and global (i.e., pervasive) causes and viewed as important" (Abramson, Alloy, & Metalsky, 1995, p. 115). This attributional style has been found to be consistent across different events and stable across time and has repeatedly been found to be associated with depression.

Cognitive vulnerability to depression has been found to be treatable with cognitive psychotherapy (Evans et al., 1992; Hollon, DeRubeis, & Seligman, 1992). Additionally, therapeutic techniques that aim to alter depressogenic cognitions are associated with fewer relapses and recurrences of depressive symptoms as compared with pharmacotherapy (DeRubeis et al., 1990; Hollon et al., 1992). Overall, research suggests that cognitive vulnerability to depression is treatable. However, a largely unanswered and potentially meaningful question remains: Is cognitive vulnerability to depression preventable?

In order to ascertain whether cognitive vulnerability is preventable, researchers must first determine the origins of cognitive vulnerability. Rose and Abramson (1992) hypothesized that negative inferential style might arise from a history of child sexual, physical, or emotional maltreatment. Gibb et al. (2001) found that individuals who were at high risk for depression due to high levels of cognitive vulnerability were more likely to report a history of emotional maltreatment as compared to individuals who were not at high risk in terms of cognitive vulnerability.

In the realm of less traumatic childhood events, Beck (1967) hypothesized in his cognitive theory of depression that negative self-schemas are learned through personal experiences, others' judgments of the individual, and identification with significant others in childhood, such as parents, siblings, and friends. However, few studies have directly investigated this hypothesis. Alloy et al. (2001) studied student and parent triads in which the students had been classified as either high- or low-risk based on their scores on cognitive vulnerability measures. Results indicated that mothers of high-risk students had higher levels of dysfunctional attitudes and more depressogenic inferential styles for themselves. Further, parents of high-risk students were more likely to make stable, global attributions for events in their offsprings' lives and to expect more negative consequences to flow from negative events that could befall their offspring as compared to parents of low-risk students. Garber and Flynn (1999) recently found that children's attributional style for child-focused events was associated with their mothers' attributional style, although mothers' attributional style did not predict children's attributional style prospectively. Garber and Flynn concluded that the parent-child relationship was an important context for the development of attributional style but stated that a modeling process does not account for it. Similarly, research by Turk and Bry (1992) found a significant relationship between the attributions that fathers made about events in their children's lives and their children's attributional styles.

Until recently, few studies investigating cognitive vulnerability to depression have assessed both dysfunctional attitudes and attributional style. Whisman and McGarvey's (1995) finding that attachment was differentially related to dysfunctional attitudes and attributional style suggests that these constructs, while both conceptually defined as cognitive vulnerability, are distinct phenomena. Joiner and Rudd (1996) suggested that the distinction between attributional style and dysfunctional attitudes is largely that the former represents "explanation" while the latter represents a general "outlook." In a direct test of the relationship between these two constructs, Spangler, Simons, Monroe, and Thase (1997) found that dysfunctional attitudes and attributional style, although related, were distinct constructs. Individuals who exhibited high levels of one type of cognitive vulnerability were no more likely than controls to exhibit high levels of the other type of cognitive vulnerability. Further, the findings suggested two distinct subtypes of depression based on the dominant cognitive vulnerability factor. Spangler et al. (1997) pointed out that these findings did not rule out the possibility of a final common pathway of the two constructs to a similar subtype of depression. Clearly, the relationship between dysfunctional attitudes and attributional style merits further research.

Many of the studies previously discussed established the association between cognitive vulnerability factors and depression (cf. Alloy et al., 1999). In order to elucidate the relationship between maternal cognitive vulnerability and offspring cognitive vulnerability, it is important to control statistically for the presence of depressive symptoms in both parties. This helps to ensure that any relationships between cognitive vulnerability constructs are not simply representative of relationships between depressive symptoms in mothers and offspring. Additionally, the frequent comorbidity of depression and anxiety (Zimmerman, McDermut, & Mattia, 2000) and the association of cognitive vulnerability factors with anxious symptoms (Sanz & Avia, 1994) suggests the importance of statistically controlling for anxiety in mothers and offspring as well.

So far, theory and empirical evidence presented suggest that parenting is a critical factor in the development of cognitive vulnerability to depression. The current study further investigated this hypothesis. Following the leads of Garber and Flynn (1999) and Turk and Bry (1992), this study focused on the relationships between mothers' attributional styles both for themselves and for events that could happen to their offspring and their offsprings' attributional styles and dysfunctional attitudes. More specifically, the current study investigated two possibilities: that children learn their cognitive styles through social modeling of their mothers' attributional style and/or that children internalize their mothers' attributional styles regarding their children. The current study involves a replication of Turk and Bry's (1992) method with an undergraduate sample, and an extension of the method to include offsprings' dysfunctional attitudes. It was hypothesized that mothers' attributional styles both for themselves and for events in their offsprings' lives would be associated with their offsprings' attributional style and dysfunctional attitudes. It was further hypothesized that relationships between mothers' attributional styles and their offsprings' cognitive styles would remain significant when depression and anxiety had been controlled statistically in both mothers and their offspring.

## METHOD

Participants were 42 undergraduate psychology students in a midsize, midwestern, private Catholic university and their mothers. Those students who were willing to participate and gave permission for their mothers to be contacted were included in the screening phase of the study. A cut-off score of 10 on the *Beck Depression Inventory* was used to categorize students as either nondepressed or depressed. Mothers of all students who scored depressed were recruited for participation in the study. Mothers of a random sample of non-depressed students were also recruited for participation in the study.

Eighty-one percent of student participants were female; 19%, male. Students were 86% Caucasian, 5% African-American, 7% Asian-American, and 2% Hispanic or other. Students described themselves as 69% Catholic, 7% Protestant, 2.5% Jewish, 2.5% Muslim, and 19% as having no religious affiliation. The majority of students (83%) were in their first two years of school and living either in a dorm or an apartment (83%). Among mothers. ethnicity and religious affiliation closely mirrored those of their offspring. The majority (76%) of mothers were ages 41-50; 10% were ages 31-40. and 14% were ages 51 or older. The majority of mothers (59%) had either some college education or an undergraduate degree; 17% had a high school diploma or had attended a technical or trade school; and 24% had either some post-graduate work or a graduate degree.

**Measures**

*Attributional Style Questionnaire-Expanded* (ASQ-E): The ASQ-E (Peterson & Seligman, 1988) is a revision of the *Attributional Style Questionnaire* (ASQ). The ASQ was designed to measure attributions, considered as relatively enduring traits, for 12 hypothetical events equally divided between positive and negative on the dimensions of internality, stability, and globality. The ASQ-E expands the number of hypothetical situations from 12 to 24; includes only negative situations; and adds the dimension of importance of the hypothetical event. Like the original ASQ, the ASQ-E asks participants to rate causes of hypothetical events that are equally divided between affiliation-related ("Your best friend tells you that you are not to be trusted") and achievement-related ("You've been looking for a job unsuccessfully for some time.") Respondents indicate their likelihood of making each particular type of attribution on a series of four 7-point Likert scales. Scores are averaged for each dimension. yielding ranges of scores from 1-7.

Peterson and Villanova (1988) found that internal consistencies for the ASQ-E were greatly improved over the original ASQ. Internal consistency coefficients were .66 for internality, .85 for stability. and .88 for globality (Peterson & Villanova. 1988). Construct validity for the ASQ-E was demonstrated by moderate correlations between each dimension of attributional style and depression. Construct validity was also demonstrated by high correlations between each dimension of attributional style and attributional ratings of specific events that had actually happened to respondents.

Following Abramson et al. (1995), we focused on the dimensions of stability and globality, adding together rather than averaging scores for these two dimensions. We retained 23 out of 24 items, eliminating responses to the hypothetical situation of "sexual dysfunction" because mothers rarely completed responses to that potential event in their offsprings' lives and because we wanted the questionnaire to be comparable across respondents and perspectives. This version of the questionnaire was filled out by both the mothers and their offspring.

In addition, mothers filled out a modified version of the ASQ-E modeled after a revision of the original ASQ in the study by Turk and Bry (1992). Mothers filled out a version of the questionnaire that posed the same hypothetical events that are in the ASQ-E, but asked them to imagine their child in the situation ("Your son's/daughter's steady romantic relationship ends;" "Your son/daughter has trouble with one of his/her instructors.")

*Dysfunctional Attitude Scale-Form A* (DAS-A): The DAS (Weissman & Beck, 1978) was designed to measure the dysfunctional attitudes underlying the cognitive content of depressive symptoms following Beck's (1967) cognitive theory of depression. The DAS has also been found to have excellent concurrent validity with measures of depression as well as good discriminant validity in differentiating between groups of depressed and nondepressed individuals. Internal consistency of the scale used in this study (Form A) has been measured at .84 to .92 (Weissman & Beck, 1978). Offspring completed this questionnaire.

*Beck Depression Inventory* (BDI): The BDI (Beck & Steer, 1997) is the third version of an instrument designed to assess the intensity of affective, cognitive, motivational, and physiological symptoms of depression. The BDI is a 21-item self-report instrument whose response alternatives are arranged in a four-point Likert format; scores can range from 0-63. The instrument has been found to have good validity as a measure of depression in a college population (Bumberry, Oliver, & McClure, 1978). Internal consistency of the BDI has been measured at .81 in nonpsychiatric samples. Both mothers and offspring completed the BDI.

*Beck Anxiety Inventory* (BAI): The BAI (Beck, Epstein, Brown, & Steer, 1988) was developed specifically to measure the severity of anxiety and to discriminate anxiety from depression reliably in psychiatric populations. The BAI is a self-report inventory that assesses 21 common symptoms of anxiety using a four-point Likert scale; scores range from 0 to 63.

Internal consistency reliability as measured by coefficient $\alpha$ and one-week test-retest reliability have been reported as .92 and .75, respectively (Beck et al., 1988). Excellent convergent validity and discriminant validity have been reported in psychiatric populations (Beck et al., 1988). High internal consistency reliability and comparable factor structures have been demonstrated in both clinical and student samples (Borden, Peterson, & Jackson, 1991). Both mothers and offspring completed the BAI.

**Procedure**

All participants were promised and received complete anonymity. Last names of students were not recorded. Neither first nor last names of students were recorded on their own questionnaires. They were identified by a code number that was marked on the mothers' questionnaires. Mothers of student participants were contacted by phone and asked to participate. Questionnaires were sent to and returned by mothers through the mail. Envelopes were addressed to "Mother of (student's first name)." When the mother's packet was returned, it was matched up with her child's packet, at which time the identifier of the student's first name was removed. Follow-up phone calls were made to mothers to ensure return of questionnaires. Information was provided to all participants regarding referrals for a crisis hotline phone number and psychological services available in the community.

## RESULTS

TABLE 1 Means and Standard Deviations of Psychological Variables by Type of Respondent

| | | | Mothers | | | |
|---|---|---|---|---|---|---|
| Psychological Variable | Offspring Rating Themselves | | Mothers Rating Themselves | | Mothers Rating Events in Offsprings' Lives | |
| | M | SD | M | SD | M | SD |
| DAS-A | 136.24 | 26.10 | -- | -- | -- | -- |
| ASQ-E | 8.97 | 1.35 | 8.03 | 1.33 | 7.73 | 1.31 |
| BDI | 12.52 | 8.14 | 5.14 | 4.51 | -- | -- |
| BAI | 16.33 | 10.88 | 4.86 | 3.71 | -- | -- |

Note: DAS-A = *Dysfunctional Attitude Scale*-Form A; ASQ-E = *Attributional Style Questionnaire*-Expanded Stability and Globality; BDI = *Beck Depression Inventory*; BAI = *Beck Anxiety Inventory*

Descriptive statistics for psychological variables are presented in Table 1. All students' scores were within the expected range overall given the nature of the sample (Peterson & Villanova, 1988; Rose, Abramson, Hodulik, Halberstadt, & Leff, 1994). Mothers' scored higher on their attributional style for events in their offsprings' lives (meaning that mothers in this study had more depressogenic attributional styles for their offspring) than did mothers in Turk and Bry's (1992) study. However, this finding is probably not unexpected given that two-thirds of the parents chosen to participate in the study were identified based on the level of depression present in their offspring and given that depression tends to run in families (Katz & McGuffin, 1993). Therefore, these parents might be expected to score higher on measures of cognitive vulnerability.

TABLE 2 Zero-Order Relationships Among Psychological Variables

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Offspring | | | | | | | | |
| 1 DAS-A | 90 | .33* | .60*** | 25 | .48** | .57*** | .07 | -.08 |
| 2 ASQ-E | | 89 | .03 | 13 | .02 | .16 | -.21 | -.25 |
| 3 BDI | | | .89 | 39** | .40* | .49** | .03 | .13 |
| 4 BAI | | | | 92 | .15 | .27 | .02 | .15 |
| Mothers | | | | | | | | |
| 5 ASQ-E Rating Themselves | | | | | .90 | .74*** | .17 | .08 |
| 6 ASQ-E Rating Offspring | | | | | | .92 | .08 | .07 |
| 7 BDI | | | | | | | .79 | .68** |
| 8 BAI | | | | | | | | .70 |

Notes: DAS-A = Dysfunctional Attitude Scale-Form A; ASQ-E = Attributional Style Questionnaire-Expanded Stability and Globality; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory
$\alpha$ coefficients are shown on the diagonal
* $p < .05$ ** $p < .01$ *** $p < .001$

Intercorrelations among students' and mothers' scores on psychological measures are shown in Table 2. Mothers' scores on attributional style for events that might happen to their offspring were significantly correlated with their offsprings' BDI scores ($r = .49$, $p < .01$). This indicates that those students whose mothers were more likely to attribute negative events that could happen to their student offspring to stable, global causes were more likely to be depressed. Mothers' attributional style scores for events that happened to their offspring and students' DAS-A scores was .57, $p < .001$, indicating that students whose mothers were more likely to attribute events that could happen to their student offspring to stable, global causes were also more likely to have elevated dysfunctional attitudes.

Students' scores on the DAS-A were significantly correlated with their scores on the BDI ($r = .60$, $p < .001$), indicating that, as has been found in the past, scores on the DAS functioned as episodic markers of depressive symptomatology as well as vulnerability markers of cognitive vulnerability to depression. For this reason, it was important to remove the effect of the students' depression on the students' cognitive vulnerability scores.

TABLE 3 Summary of Stepwise Hierarchical Multiple Regression Predicting Offsprings' Dysfunctional Attitudes

| Variable | B | SE B | *Beta* |
|---|---|---|---|
| | Equation 1 | | |
| Offsprings' BDI | 1.38 | .44 | .43**** |
| Mothers' ASQ-E For Their Offsprings Residualized for Their Depression | 6.97 | 2.71 | .35* |
| | Equation 2 | | |
| Offsprings' BDI | 1.93 | .40 | .60**** |
| Offsprings' BAI | .21 | .33 | .09 |
| Mothers' ASQ-E For Offsprings Residualized for Their Depression and Anxiety | 6.71 | 2.76 | .34* |

Notes: DAS-A = *Dysfunctional Attitude Scale*-Form A; ASQ-E Inferential Style = *Attributional Style Questionnaire*-Expanded Stability and Globality; BDI = *Beck Depression Inventory*; BAI = *Beck Anxiety Inventory*

For Equation 1, $R^2 = .36$ for Step 1; change in $R^2 = .09$ for Step 2

For Equation 2, $R^2 = .36$ for Step 1; change in $R^2 = .01$ for Step 2; change in $R^2 = .09$ for Step 3.

* $p < .05$ **** $p < .0001$

We conducted two hierarchical multiple regression analyses to predict students' scores on the DAS-A. The results for both analyses are presented in Table 3. In the first analysis we entered the students' scores on the BDI on the first step to control for students' level of depressive symptomatology and the mothers' scores on attributional style for their offspring residualized for mothers' depression on the second step.[1] In the second analysis we entered students' scores on the BDI on the first step and students' scores on the BAI on the second step to control for both the students' depression and the students' anxiety. We then entered mothers' scores on attributional style for their offspring residualized for both mothers' depression and mothers' anxiety on the third step.

Results of the two analyses were very similar. Students' depression was a highly significant predictor of their dysfunctional attitudes. In the first analysis, mothers' attributional style scores for their offspring with the mothers' depression controlled statistically was a significant predictor of their offsprings' dysfunctional attitudes. In the second analysis, students' anxiety did not predict additional variance after variance attributable to students' depression had been removed. However, mothers' attributional style for their offspring with the mothers' depression and anxiety controlled statistically was a significant predictor of their offsprings' dysfunctional attitudes.

In summary, mothers' scores on attributional style regarding events that happened to their offspring significantly predicted their offsprings' scores on dysfunctional attitudes with depression controlled in both students and in their mothers. Mothers' scores on attributional style regarding their offspring also significantly predicted their offsprings' scores on dysfunctional attitudes with both depression and anxiety controlled statistically in both students and their mothers.

## DISCUSSION

The results of this study suggest that mothers' attributional styles for events that could occur in the lives of their offspring are significantly related to their offsprings' dysfunctional attitudes as young adults. This relationship was present for mothers' attributional styles for their children when the influences of both depression and anxiety were controlled. Overall, the current study provides support for Beck's (1967) theory that depressogenic schemas are formed from childhood experiences, including interactions with parents.

While this study found a relationship between maternal attributional style for their offspring and offsprings' dysfunctional attitudes, a relationship between maternal attributional style for their offspring and offsprings' attributional style was not suggested. This finding was unexpected, yet it appears to be consistent with previous findings suggesting that attributional style and dysfunctional attitudes are related but distinct constructs (Spangler et al., 1997). As this research suggested, both constructs are considered to be the diathesis component of separate cognitive diathesis-stress theories of depression. Parents may express their attributional style about their children through specific explanatory statements about events in their children's lives. For example, when discussing with their offspring the offspring's break-up of a steady romantic relationship, one parent might offer the explanation, "He just isn't as emotionally mature as you are," offering hope that other romantic relationships will be available and will go better in the future. Another parent might say, "You'd have to look long and hard to find a guy as great as he was," implying enduring, pervasive, and thus irremediable loss. Specific statements like these may then serve to instill and later reinforce a generalized outlook (i.e., dysfunctional attitudes) in their children.

These findings appear to complement those of Alloy et al. (2001), who surveyed students at high and low risk in terms of cognitive vulnerability and their parents. Parents of students at high risk reported that while imagining hypothetical negative events that could befall their offspring, they made more stable, global attributions for these events as compared to parents of students at low risk. Further, parents of high-risk student predicted those negative events would have more negative consequences than did students at low risk and their parents. These associations between cognitive vulnerability in offspring and parental inferential style remained significant after depression had been controlled statistically in both respondents. In our sample we found that students with higher levels of dysfunctional attitudes had mothers who made attributions about hypothetical negative events that could happen to their offspring that were more stable and more global. These relationships between cognitive vulnerability in offspring and attributional style in their mothers remained significant after both depression and anxiety were controlled statistically in both respondents. Despite the fact that measures used in the two investigations differed, both studies found significant relationships between offspring cognitive vulnerability and parental attributional style for more typical, non-traumatic events that can happen to offspring after accounting for current mood state. Results of the two studies differ slightly in the particular facets of cognitive vulnerability and inferential style that were found to be related.

This study has several limitations. The most important limitation is the cross-sectional design, making it impossible to draw causal inferences from the relationships found: it is possible that mothers' attributional style for their children is influenced by their children's dysfunctional attitudes or generalized outlook. Other limitations pertain to the sample, which was relatively small and included a high proportion of Caucasian upper-middle class participants and a high proportion of mothers and offspring of Catholic religious affiliation.

It would be important for future research to continue to explore the origins of cognitive vulnerability to depression in socialization exper- iences with different samples, including in younger children. The association between cognitive vulnerability to depression and fathers' cognitive styles needs much greater examination. It is also recommended that researchers continue to explore the relationship and distinction between dysfunctional attitudes and attributional style. Additionally, research elucidating the process by which explanatory statements by parents lead to dysfunctional attitudes in their offspring would assist in extending these findings and potentially suggest strategies for the prevention of cognitive vulnerability.

## REFERENCES

Abramson, L. Y., Alloy, L. B., & Metalsky, G. I. (1995). Hopelessness depression. In G. M. Buchanan, M .E .P. Seligman, et al. (Ed.), *Explanatory Style*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review, 96*, 358-372.

Alloy, L., Abramson, L. Y., Tashman, N. A., Berrebbi, D. S., Hogan, M. E., Whitehouse, W. G., Crossfield, A. G., & Morocco, A. (2001). Developmental origins of cognitive vulnerability to depression: Parenting, cognitive, and inferential feedback styles of the parents of individuals at high and low cognitive risk for depression. *Cognitive Therapy and Research, 25*, 397-423.

Alloy, L. B., Abramson, L. Y., Whitehouse, W. G., Hogan, M. E., Tashman, N. A., Steinberg, D. L., Rose, D. T., & Donovan, P. (1999). Depressogenic cognitive styles: Predictive validity, information processing and personality characteristics, and developmental origins. *Behaviour Research and Therapy, 37*, 503-531.

Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Harper & Row, Publishers.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*, 893-897.

Beck, A. T., & Steer, R. A. (1997). *Beck Depression Inventory* manual. San Antonio, TX: The Psychological Corporation.

Beck, J. S. (1995). *Cognitive therapy: Basics and beyond*. New York:. Guilford Press.

Borden, J. W., Peterson, D. R., & Jackson, E. A. (1991). The Beck Anxiety Inventory in nonclinical samples: Initial psychometric properties. *Journal of Psychopathology and Behavioral Assessment, 13*, 345-356.

Bumberry, W., Oliver, J. M., & McClure, J. N. (1978). Validation of the Beck Depression Inventory in a university population using psychiatric estimate as the criterion. *Journal of Consulting and Clinical Psychology, 46(*1), 150-155.

DeRubeis, R. J., Evans, M. D., Hollon, S. D., Garvey, M. J., Grove, W. M., & Tuason, V. B. (1990). How does cognitive therapy work? Cognitive change and symptom change in cognitive therapy and pharmacotherapy for depression. *Journal of Consulting and Clinical Psychology, 58*, 862-869.

Evans, J. M. G., Hollon, S. D., DeRubeis, R. J., Piasecki, J. M., Grove, W. M., Garvey, M. J., & Tuason, V. B. (1992). Differential relapse following cognitive therapy and pharmacotherapy of depression. *Archives of General Psychiatry, 49*, 802-808.

Garber. J., & Flynn. C. (1998). Origins of the depressive cognitive style. In D. Routh & R. J. DeRubeis (Eds.), *The science of clinical psychology: Evidence of a century of progress* (pp. 53-93). Washington. DC: American Psychological Association.

Gibb. B. E., Alloy, L. B., Abramson. L. Y., Rose. D. T., Whitehouse. W. G., Donovan. P., Hogan. M. E., Cronholm. J., & Tierney, S. (2001). History of childhood maltreatment, negative cognitive styles, and episodes of depression in adulthood. *Cognitive Therapy and Research, 25*, 425-446.

Hollon. S. D., DeRubeis. R. J., & Seligman. M. E. P. (1992). Cognitive therapy and the prevention of depression. *Applied and Preventive Psychiatry, 1*. 89-95.

Joiner. T. E., & Rudd. M. D. (1996). Toward a categorization of depression-related psychological constructs. *Cognitive Therapy and Research, 20*. 51-68.

Katz, R., & McGuffin. P. (1993). The genetics of affective disorders. In D. Fowles (Ed.), *Progress in experimental personality and psychopathology research*. New York: Springer.

Peterson. C., & Villanova. P. (1988). An Expanded Attributional Style Questionnaire. *Journal of Abnormal Psychology, 97*. 87-89.

Rose. D. T., & Abramson. L. Y. (1992). Developmental predictors of depressive cognitive style: Research and theory. In D. Cochetti & S. Toth (Eds.), *Rochester symposium of developmental psychopathology, Vol. IV* (pp. 323-349). Rochester, NY: University of Rochester Press.

Rose, D. T., Abramson, L. Y, Hodulik, C. J., Halberstadt, L., et al. (1994). Heterogeneity of cognitive style among depressed inpatients. *Journal of Abnormal Psychology, 103*, 419-429.

Sanz, J., & Avia, M. D. (1994). Cognitive specificity in social anxiety and depression: Self-statements, self-focused attention, and dysfunctional attitudes. *Journal of Social and Clinical Psychology, 13* (2), 105-137.

Spangler. D .L., Simons, A. D., Monroe. S. M., & Thase, M. E. (1997). Comparison of cognitive models of depression: Relationships between cognitive constructs and cognitive diathesis-stress match. *Journal of Abnormal Psychology, 106*, 3, 395-403.

Turk. E., & Bry, B. (1992). Adolescents' and parents' explanatory styles and parents' causal explanations about their adolescents. *Cognitive Therapy and Research, 16*. 349-357.

Weissman. A. N., & Beck, A. T. (1978). *Development and validation of the Dysfunctional Attitude Scale*. Paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada.

Zimmerman. M., McDermut, W., & Mattia. J .I. (2000). Frequency of anxiety disorders in psychiatric outpatients with major depressive disorder. *American Journal of Psychiatry, 157*, (8), 1337-1340.

---

[1] Although mothers' scores on attributional style were not significantly correlated with mothers' depression or mothers' anxiety, mothers' depression and mothers' anxiety served as suppressor variables in the correlations between offsprings' dysfunctional attitudes and mothers' attributional styles. We therefore controlled for mothers' depression and anxiety in these analyses.

# American High School Seniors' Mathematics Literacy Achievement

James B. Schreiber
*Southern Illinois University-Carbondale*

Elisha A. Chambers
*University of Missouri - St. Louis*

The purpose of this study is twofold: the first goal is to examine how individual differences among students impact math achievement, and the second goal is to examine if there are differences among schools that add to the explanation for math achievement differences. The sample consists of 4,140 American students (2070 boys, 2070 girls) from 211 public schools who participated in the Third International Mathematics and Science Study (TIMSS). This study was conducted using a two-level model with student level variables at the first level and school level and aggregate student level variables at the second level while the outcome variable was mathematics literacy. The results indicate that the variables girl, employment, parental education, attitude, non-academic activities, hard work, active class participation, being a math expert, and being a math and physics expert are all significant predictors of mathematics literacy achievement. Future research should be directed toward more in-depth analyses of students, especially girls in mathematics.

The intense concern over the mathematics achievement levels of American elementary and high-school students can be seen through the number of articles published over the past thirty years (e.g., Baker, 1993; Bracey, 1992; Freudenthal, 1975; Rotberg, 1990; Stedman, 1994). The majority of results published from international studies have used cross-tabulations to examine math achievement scores (e.g., Garden, 1989; Husen & Postlewaite, 1967; Schmidt, McKnight, Cogan, Jakwerth, & Houang, 1999). Overall, relationships have been found between numerous variables and student achievement scores. These factors have been both student related (e.g., attitude, beliefs) and school related (e.g., class activities, school climate).

Wiley and Harnischfeger (1974) and Harnischfeger and Wiley (1976) developed a six-component model of school learning. These six components are divided into three categories that include *background*, *teaching-learning process*, and *acquisition*. The first category, back-

---

*Author info*: Correspondence should be sent to: Dr. James Schreiber, Dept. of Ed. Psych. & Special Ed., Southern Illinois University, Carbondale, IL 62901.

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 15-30.
© NAJP

ground, includes such elements as curriculum, institutional factors, and personal characteristics of students and teachers. The second category, teaching-learning process, includes student pursuits and teacher activities (Harnischfeger and Wiley utilize pursuits and activities interchangeably). The last category, acquisition, is analogous to student achievement. These components work together in terms of time, where the total amount of active learning is emphasized in the teaching-learning activities.

Research on student activities has included both classroom-related and extracurricular activities. Extracurricular activities for students have been viewed in the research literature as both beneficial and detrimental (Gerber, 1996). When it comes to understanding the relationship between extracurricular activities and achievement, there are two main views. In the first view, the *zero-sum concept*, greater activity subverts academic achievement (Coleman, 1961; Marsh, 1992). In contrast, the second view, the *personal development model*, presumes that extracurricular experiences promote holistic student development thereby enhancing non-academic goals and possibly facilitating academic goals (Holland & Andre, 1987). Since supporting evidence exists for both views, it seems that a hybrid or blended model would be beneficial. For example, some activities such as homework are associated with positive academic achievement (Cooper, 1989), whereas other activities such as television viewing are negatively associated with academic achievement (Williams, Haertel, Haertel & Walberg, 1982). Since so many students participate in a variety of extracurricular activities, it is important that we examine and understand the relationship between these pursuits and achievement.

The past few decades have also witnessed a great deal of research on student level factors that impact mathematics achievement. Some of the most salient of these student level factors include attitudes and beliefs. A positive relationship between attitude and achievement has long been observed (Ethington & Wolf, 1986; Ma, 1997; Suydam & Weaver, 1975). In a meta-analysis conducted by Ma and Kishnor (1997), the relationship between mathematical self-concept and achievement in mathematics was examined. They found an effect size of .23 for self-concept about mathematics and achievement. The authors concluded that a positive self-concept about mathematics is associated with higher achievement in mathematics. As crucial as attitude towards mathematics is for mathematics achievement, understanding a student's academic related beliefs is also an important key to comprehending level of math achievement (Dweck & Elliot, 1983; Schommer, Crouse, Rhodes, 1992). Academic math beliefs have been observed to impact the achievement level of students (Dweck & Elliot, 1983). Thus, for both attitudes and beliefs, a positive relationship appears to exist between attitude and achievement.

Another student level variable that has received a great deal of attention has been gender differences in academic achievement. Typically, differences in achievement for boys and girls have been observed, beginning to emerge at the age of 13 years with boys outperforming girls (Fennema & Tartre, 1985; Moore & Smith, 1987; Sherman, 1987). In their longitudinal study, Hilton and Berglund (1974) found that after grade five, boys outperformed girls in mathematics achievement. In addition, girls were less likely to be interested in mathematics and did not see career-related benefits. Although recent research has suggested that the gender gap is narrowing and may even be in favor of girls, the attitudinal and environmental factors still seem to exist. For example, Gorard, Rees, and Salisbury (1999) found that the academic gender gap has decreased in Wales since 1992. Gorard and his colleagues also found that gender gaps in achievement in mathematics and science are becoming nonexistent. American data also indicate that the gender gap has narrowed (e.g., Bae, Choy, Geddes, Sable & Snyder, 2000). However, girls continue to lag behind boys in high school math and science and tend not to major in these fields in post-secondary schooling. Although the gender gap appears to be narrowing, Warrington and Younger (2000) found students' perceptions of their educational environments were gender-biased, as students indicated that there were gender-related subjects, gender-related careers, the classrooms were dominated by boys, and teachers' had gender-typed perceptions. In general, it appears that the gender gap is narrowing; however, considerable differences mathematics and science achievement continue to be documented.

One student-related variable that has been examined with consistent results is socioeconomic status. Socioeconomic status has consistently been positively related to achievement in all content domains (Heyns, 1978; Goleman, 1988; Ma, 1997, Schreiber, 2002, Schreiber & Chambe[illegible] in press). That is, students who come from families with higher socioeconomic status tend to do academically better than students who do not. As noted below, similar observations have been made for the school level socioeconomic status as well.

At the school level, three factors have received considerable attention. These include activities, climate, and funding. The impact of the activities that occur inside the classroom is also an important factor in understanding academic achievement. For example, the engagement of students in different classroom activities can impact their level of achievement after controlling for other important variables (Hafner, 1993). Currently, there has been a move towards the belief that learners are architects of their own knowledge (Anthony, 1996). This belief creates the assumptions that learning is knowledge construction and not absorption or recording, where new knowledge is dependent on current knowledge. In essence, learning is not a passive act of absorbing ready-made knowledge, but a construction zone where the student is the contractor. The importance of this becomes clear when student perceptions of classroom activities are examined. According to Eichinger (1997), students acknowledge that the traditional teaching methods that include textbooks and lectures permeate their classroom learning experiences, even though the students indicate that they prefer more dynamic activities. Although class level factors are important, there are also important factors found at the school level.

Research on school climate, positive and negative events, has also yielded a positive association with academic achievement (Grossin, 1991); that is, a significant correlation between academic achievement and school climate has been observed (Grossin, 1991). The research on effective schools has focused on student outcomes after adjusting for student background variables and external factors (Grossin, 1991). Some school climate factors, such as absenteeism, violence, and drug abuse, have been shown to negatively impact achievement (Hawkins, 1997). These factors disrupt and impair the educational process, thereby, negatively impact achievement (Wilson, 1995). The size of a school has also been observed to have an impact on the achievement levels of the students (Luyten, 1994) as several studies have found a significant relationship between the size of a school and student achievement (Clements, 1969; Downey, 1978; Edington, & Martello, 1989). These studies observed a negative relationship indicating that as a high school grows in size, achievement decreases.

One final school level variable that has received substantial attention is the socioeconomic status of the school. Average school socio-economic status has been observed to be significantly related to mean school mathematics achievement, such that the higher the school socioeconomic status, the higher the mean mathematics achievement (Lee & Bryk, 1989). While money alone does not necessarily increase mathematics achievement, resources are a required component to educational improvement (Clarke, 1992). In a meta-analysis of nearly 700 studies, Greenwald, Hedges, and Laine (1996) found consistent positive results that indicated that greater resource inputs are related to higher achievement. They found consistent significant positive results for per-pupil expenditures and teacher salary. The authors concluded that school resources are systematically related to student achievement and that these results are large enough to be educationally important (Greenwald, et al., 1996).

The research questions for this present study include: (1) How do individual differences among students impact achievement? and (2) Are there differences among schools that add to the explanation for achievement differences?

## METHOD

### Participants

The participants for this study consisted of 4140 American students (2070 boys, 2070 girls) from the Third International Mathematics and Science Study (TIMSS) final year of the secondary school cohort (Senior's, termed Population 3 by TIMSS) who were administered test booklets 1A and 1B for mathematics literacy. These students were sampled from 211 public schools and approximately ranged in age from 17-19. The participants were designated has having taken general math courses, advanced math courses, or both advanced math and physics courses based on school records (Gonzalez, Smith, and Sibberns, 1998). For a detailed description of the sampling procedure and other information regarding TIMSS see Williams and Levine (1999) and Gonzalez, et al., (1998). One survey was administered to the students, a separate survey was administered to schools, and one test was administered to the students. From the school questionnaire, variables relating to instructional resources, school, size, and climate (negative incidents) were used. From the student survey information concerning demographic characteristics, attitudes, activities, and perceptions of classroom were used. A detailed description of all the variables used in this study can be obtained from the first author.

### Analysis

The analysis was a two-level model with student level variables at the first level and at the second level, school and aggregate student variables. A sample model is explained below. The outcome variable under investigation is the mathematics literacy plausible value number one. Plausible value technology is based on item response theory. For a detailed discussion, see Mislevy (1991). Plausible values are the recommended scores for analyses according to the International Association for the Evaluation of Educational Achievement (IEA), who conducted the study. These scores take into account specific difficulty of the items, their relative difficulty, and they reflect the measurement error component.

**Equation for the Sample Model** The within school model regresses literacy mathematics achievement for student *i* within school *j* as a function of gender, level of parental education, and attitude towards mathematics.

*Mathematics Literacy* ($Y_{ij}$) = $B_{0j}$ + $B_{1j}$ (gender) + $B_{2j}$ (parent education) + $B_{3j}$ (attitude) + $r_{ij}$
where,
$B_{0j}$ = mean mathematics literacy in school $j$,
$B_{1j}$ = mean difference between achievement of girls and boys in school $j$
$B_{2j}$ = degree to which parental education differences among students relate to mathematics literacy in school $j$
$B_{3j}$ = degree to which attitudinal differences among students relate to mathematics literacy in school $j$
$r_{ij}$ = error or Level 1 random effects

The coefficients ($B_{ij}$) from the Level 1 model can also be modeled, as illustrated in the following example.

*Attitude Towards Mathematics* ($B_{3j}$) = $\gamma_{30} + \gamma_{31}$ (school size) + $u_{3j}$
where,
$\gamma_{30}$ = average attitude towards mathematics -- differential influence of attitude toward mathematics in schools
$\gamma_{31}$ = differentiating effect of school size on attitude toward mathematics
$u_{3j}$ = error or Level 2 random effects

## RESULTS

TABLE 1 Descriptive Statistics for Level-1 Individual Differences for Students (Within School)

| Variable | Mean | sd | Min | Max |
|---|---|---|---|---|
| Math Literacy | 458.19 | 89.53 | 183.95 | 884.01 |
| Gender | 0.52 | 0.50 | 0.00 | 1.00 |
| Employment | 3.03 | 1.71 | 1.00 | 5.00 |
| Parent Education | 1.88 | 0.75 | 1.00 | 4.00 |
| Attitude | 14.21 | 4.03 | 6.00 | 24.00 |
| Non-academic | 9.54 | 2.55 | 4.00 | 20.00 |
| Academic | 5.73 | 1.94 | 3.00 | 15.00 |
| Natural Talent | 5.38 | 1.30 | 2.00 | 8.00 |
| Hard Work | 4.02 | 1.21 | 2.00 | 8.00 |
| Active | 13.14 | 3.04 | 5.00 | 20.00 |
| Passive | 11.87 | 2.62 | 4.00 | 16.00 |
| Advanced Math | 0.07 | 0.26 | 0.00 | 1.00 |
| Advanced Math/Physics | 0.18 | 0.39 | 0.00 | 1.00 |

*N*=4.140

Descriptive statistics are in Tables 1 and 2. The hierarchical linear modeling (HLM) results for the individual student differences (Level 1 within school) indicate that working more in after school employment.

lower formal parent education, and poor math attitude were all significantly and negatively related to mathematics literacy achievement (See intercepts Table 3). The negative value for gender indicates that girls scored lower on average than boys. The greater the belief in hard work for math success and taking more advanced mathematics and physics courses were significantly and positively related to mathematics literacy achievement. Finally, the slopes for variables, school means, gender, employment, parent education, and non-academic all significantly varied among schools indicating there may be school level variables, which explain these differences.

TABLE 2 Descriptive Statistics for Level-2 Differences Among Schools (Between School)

| Variable | Mean | sd | Min | Max |
|---|---|---|---|---|
| Proportion of Girls | 0.50 | 0.13 | 0.00 | 1.00 |
| Average Parental Education | 3.38 | 0.61 | 1.18 | 4.91 |
| Average Employment | 2.82 | 0.50 | 1.20 | 3.93 |
| Average Attitude | 13.43 | 1.24 | 10.44 | 17.89 |
| Average Non-Academic | 9.43 | 0.59 | 7.97 | 10.90 |
| Average Academic | 6.06 | 0.70 | 4.48 | 7.75 |
| Average Natural Talent | 5.41 | 0.29 | 4.11 | 6.25 |
| Average Hard Work | 4.05 | 0.34 | 3.00 | 4.85 |
| Average Active | 13.51 | 0.72 | 11.62 | 15.14 |
| Average Passive | 11.93 | 0.79 | 8.00 | 14.18 |
| Resources | 19.55 | 11.75 | 0.00 | 47.00 |
| Incidents | 22.48 | 12.85 | 0.00 | 52.00 |
| Size | 1280.05 | 691.69 | 96.00 | 4000.0 |

*N*= 211

The results for school differences (Level-2, among schools) are discussed by slope (i.e., school mean, gender). The higher the proportion of girls, the more hours the average student was employed, the more time spent in non-academic activities, and the fewer the resources for instruction the lower the mean school score for mathematics literacy. The higher average belief that success in math is based on hard work, higher average of students perceiving the class as active, a positive school climate (fewer negative incidents), and higher average parental education were significantly and positively related to mean school mathematics literacy achievement.

An examination of the gender-achievement slope indicates that girls did worse than boys on the mathematics achievement test. Secondly, the higher the average number of hours worked per day and the fewer negative incidents positively impacted the slope indicating that these

TABLE 3 Hierarchical Linear Model Results

| Fixed Effect | | Coefficient | Se | t-ratio |
|---|---|---|---|---|
| School means | | | | |
| | Intercept. $\gamma_{00}$ | 469.91 | 3.01 | 156.09 |
| | Gender. $\gamma_{01}$ | -105.08 | 25.86 | -4.06 |
| | Employment. $\gamma_{02}$ | -20.06 | 6.17 | -.324 |
| | Non-academic. $\gamma_{03}$ | -28.55 | 5.22 | .5.46 |
| | Hard Work $\gamma_{04}$ | 57.53 | 8.94 | 6.43 |
| | Active $\gamma_{05}$ | 19.95 | 5.04 | 3.95 |
| | Resources $\gamma_{06}$ | -0.77 | 0.35 | -2.16 |
| | Incidents $\gamma_{07}$ | 0.89 | 0.33 | 2.66 |
| Gender-achievement slope | | | | |
| | Interceptb$\gamma_{10}$ | -15.75 | 2.09 | -7.50 |
| | Employment $\gamma_{11}$ | 13.28 | 4.23 | 3.14 |
| | Incidents $\gamma_{12}$ | 0.39 | 0.16 | 2.47 |
| Employment-achievement slope | | | | |
| | Intercept $\gamma_{20}$ | -4.55 | 0.57 | -7.86 |
| | Hard Work $\gamma_{21}$ | -4.57 | 1.78 | -2.56 |
| | Size $\gamma_{22}$ | -0.00 | 0.00 | -3.77 |
| Parent Education-achievement Slope | | | | |
| | Intercept $\gamma_{30}$ | -20.98 | 1.43 | -14.60 |
| | Gender $\gamma_{31}$ | 28.41 | 12.07 | 2.35 |
| Attitude-achievement slope | | | | |
| | Intercept $\gamma_{40}$ | -3.51 | 0.28 | -12.51 |
| Non-academic-achievement slope | | | | |
| | Intercept. $\gamma_{50}$ | -2.30 | 0.43 | -5.52 |
| | Employment $\gamma_{51}$ | -1.65 | 0.86 | -1.90 |
| | Non-academic. $\gamma_{52}$ | -1.58 | 0.71 | -2.20 |
| | Size. $\gamma_{53}$ | -0.00 | 0.00 | -1.97 |
| Hard Work-achievement slope | | | | |
| | Intercept. $\gamma_{60}$ | 7.11 | 0.79 | 9.00 |
| Active-achievement slope | | | | |
| | Intercept. $\gamma_{70}$ | 2.43 | 0.31 | 7.72 |
| Adv. Math-achievement slope | | | | |
| | Intercept. $\gamma_{\backslash 80}$ | 63.53 | 3.85 | 16.46 |
| Adv. Math/Physics-achievement slope | | | | |
| | Intercept. $\gamma_{90}$ | 91.67 | 3.06 | 29.92 |

| Random Effect | Variance Component | df | $X^2$ | p-value |
|---|---|---|---|---|
| School mean. $u_{0j}$ | 1691.09 | 196 | 2014.22 | 0.00 |
| Gender. $u_{1j}$ | 79.26 | 201 | 220.93 | 0.16 |
| Parent education. $u_{3j}$ | 20.18 | 202 | 232.86 | 0.07 |
| Attitude. $u_{4j}$ | 2.85 | 203 | 259.61 | 0.01 |

| | | | | |
|---|---|---|---|---|
| Non-academic. $u_{5j}$ | 2.44 | 200 | 241.38 | 0.02 |
| Level-1 effect $r_{ij}$ | 3237.62 | | | |

Boj var. exp. = (3114.91 – 1691.09)/3114.91 = .459 or 45.9 % of the variation in mean achievement is accounted for by these factors.
B1j var. exp. =(119.98 – 79.26)/119.98 = .339 or 33.9% reduction in the variance of the girls' achievement slope. Also the non-significant Chi-Square implies there is no statistically significant residual variance in the slopes.
B3j var. exp. = (23.72 – 20.18)/23.72 = .149 or 14.9% reduction in the variance of the parent education-achievement slope.
B4j var. exp. = (3.46-2.85)/3.46 = .176 or 17.6% reduction in the variance of the attitude- achievement slope.
B5j var. exp. = (4.44 – 2.44)/4.44 = .450 or 45% reduction in the variance of the non-academic-achievement slope.

variables may moderate the gender difference in mathematics achievement, in essence reducing the negative effect of the intercept on mathematics literacy achievement. The results for the employment-achievement slope indicate that the higher the average belief of hard work in the school and the larger the school, the more steep (negative) the job-achievement slope becomes. These two variables appear to compound the negative relationship between employment and mathematics literacy achievement.

The parent education-achievement slope intercept indicates that the less education of the parents the worse the student did. The positive value for the gender variable indicates that the higher the proportion of females in a school, the less parent education had an effect on achievement. For the non-academic-achievement slope, in schools where students had higher average hours worked per day and higher average hours per day in non-academic activities, the negative relationship between non-academic activities and mathematics literacy achievement was increased. Secondly, the larger schools appear to exacerbate the negative relationship between non-academic activities and mathematics literacy achievement.

## DISCUSSION

Overall, it appears that the traditional variables that have been observed to impact mathematics achievement are supported in this study. More specifically, lower parental education and socioeconomic status have consistently been observed to negatively impact student achievement (Cooper, Valentine, Nye & Lindsay, 1999; Ethington & Wolfe, 1986; Keith & Cool, 1986). After school employment has also been shown to be negatively associated with mathematics achievement (Brown & Steinberg, 1991, Schreiber, 2002); however, an argument for the positive impact of employment has also been put forth (D'Amico, 1984). Nonetheless, the results from this study support previous studies that indicate after school employment negatively impacts achievement. The results also demonstrate that other non-academic activities (e.g., television viewing, talking with friends) are also negatively associated with achievement. The negative results of after school employment and other non-academic activities negatively impacting achievement support the *zero-sum concept* (Coleman, 1961). It appears that greater amounts of non-academic activity may subvert achievement. From this perspective, either after school activities or academic achievement suffers. Other research has specifically looked at non-academic activities such as sports (Holland & Andre, 1987) or attempted to create a way to categorize extracurricular activities in order to make more detailed inferences of the association with different academic domains (Schreiber & Chambers, in press).

The cross-level interaction of employment and the gender-achievement slope was unexpected. Mathematically, the schools that have girls with higher average hours of work per day have less steep negative achievement slopes. Therefore, in schools where girls work more on average tend to have a smaller difference between boys and girls on mathematics literacy. This appears to provide support for the *personal development model* (Holland & Andre, 1987). It may be that girls who work are more responsible both inside and outside of school; thus, their scores are higher. Possibly the increased responsibility makes them more likely to complete homework, more likely to see the teacher for extra help, and better at time management (i.e., personal development). However, this is speculative. A cross-tabulation of girls by hours worked indicated that those who worked up to five hours a day did better than those who did not work. Another interesting result from the gender-achievement slope is the fewer the negative incidents (a more positive climate) the less impact of gender on mathematics literacy achievement. It appears that fewer negative incidents in a school reduces the gap between girls and boys on mathematics achievement.

Schools with a higher proportion of girls sampled have weaker parental education slopes, indicating that the impact of parental education on achievement in schools with a higher proportion of female students is not as strong. It may be that girls are able to "overcome" this traditionally observed effect. Again, these data cannot reveal a potential explanation for this finding. One might surmise that girls who are from homes with lower parental education have more responsibility at home and that such responsibilities provide an opportunity to exercise good time management. This idea is tenuous, as the correlation between proportion of girls in the sample as compared to the proportion of girls based on schools size records is low to moderate ($r = .40$, $p < .05$). Thus, the result could be due to the girls sampled and not to girls in general.

The employment-achievement slope indicates that schools with students who have a higher average belief that "to be successful in math one has to work hard," and those that are larger in size, had steeper negative slopes. Therefore, schools, where students have higher average belief in hard work for math success and after school employment, have an even higher negative association with mathematics literacy achievement. Given the scenario of a student who is in a school with a higher than average belief in hard work for math success and has to work may trade studying time for work time knowing that enough time for both may not be able to be accomplished. The impact of school size on the slope may be explained (from personal experience of the first author) by the idea students who are employed after school, and are in large schools may fall through the cracks and not see the teacher before the students leaves campus for work. Obviously, more work in this area is needed to separate out other issues that may be associated with this observation.

The non-academic model is easier to understand. The negative intercept indicates that participation in non-academic activities decreases academic performance. This provides additional support for the *zero-sum concept* (Coleman, 1961). The larger schools that have higher averages of hours worked per day and higher averages of non-academic hours per day have steeper negative slopes making the impact of non-academic activities worse. For example, a student who engages in non-academic activities after school and is employed, has less time to engage in such academic pursuits as homework. Furthermore, if the student is also attending a large school, the time the student is engaged in non-academic activities cannot be used to ask academic questions of his teacher. As stated previously, that situation is exacerbated in large schools, as it is sometimes very difficult to obtain one-on-one time with the teacher, given the student to teacher ratio. As with the job-achievement slope, the non-academic slope comes down to a basic issue of time. This could be an important focus of future research.

Finally, the result of advanced math students performing better on the test than the general math students was not unexpected; however, it can easily be attributed to the fact there is a difference in course participation. That is, generalists have not taken as many mathematics courses. What was unexpected was the large difference between the math-physics experts and the math experts. This is best explained by the fact that these students (e.g., calculus and physics) spend as much as twice the time in a day on similar ways of thinking and representing knowledge. The advanced math and advanced math/physics variables were truly included to control for math course experience.

The results from this study support previous findings and bring to light new relationships among factors. More in-depth analyses of students, especially girls in mathematics, need to be conducted. The cross-level interactions with employment and parental education need to be studied in a more systematic way in order to draw better inferences. Secondly, in regard to female students, it was noteworthy to see the difference between female and male students was smaller than expected (-15.75), although smaller differences have been the trend. We feel that more work needs to be conducted in the area of beliefs and attitudes and employment. Some future research questions may include: Which one in the driving force? Did achievement create beliefs, or vice versa? How does engagement in after school employment impact achievement? More studies on the Population 3 cohort are currently underway. It is hoped that this research will provide a better understanding of American high school seniors' academic achievement.

The main limitation of this study is that it is only one study trying to simultaneously examine multiple school and student factors associated with achievement. More importantly, though, those of us who work with multilevel models are sometimes at the mercy of the data sets gathered due to the sheer number of students needed to run some of these models (See Bryk and Raudenbush, Chapter 10). Consequently, some comparisons among studies may not be possible due to the different scales and instruments used. Therefore, the authors recommend collecting all possible multilevel model articles concerning student achievement and looking across the studies for consistencies, bearing in mind how the scales used were constructed.

## REFERENCES

Anthony, G. (1996). Active learning in a constructivist framework. *Educational Studies in Mathematics, 31*, 349-369.

Bae, Y., Choy, S., Geddes, C., Sable, J., & Snyder, T. (2000). *Trends in educational equity of girls & women*. Washington DC: National Center for Education Statistics.

Baker, D. P. (1993). Compared to Japan, the U.S. is a low achiever really: New evidence and comment on Westbury. *Educational Researcher, 22*(3), 18-20.
Bracey, G. W. (1992). The second Bracey report on the condition of public education. *Phi Delta Kappan, 74*, 104-117.

Brown, B. B., & Steinberg, L. (1991). *Noninstructional influences on adolescent engagement and achievement: Final report 2*. Madison, WI: National Center on Effective Secondary Schools. (ERIC Reproduction Service Document No. ED340641)

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage.

Clarke, J. (1992). *Resources to fix schools: The necessities for educating children in Illinois*. (ERIC Reproduction Service Document No. ED404412)

Clements, W. H. (1969). *A third look at high school size: Academic success of entering freshmen for 1965, 1967, and 1968 by class size category*. (ERIC Reproduction Service Document No. ED033664).

Coleman, J. S. (1961). *The adolescent society*. New York, NY: Free Press of Glencoe.

Cooper, H. (1989). *Homework*. New York, NY: Longman.

Cooper, H., Valentine, J. C., Nye, B., & Lindsay, J. J. (1999). Relationships between after-school activities and academic achievement. *Journal of Educational Psychology, 91*(2), 369-378.

D'Amico, R. (1984). Does employment during high school impair academic progress? *Sociology of Education, 57*, 152-164.

Downey, R. G. (1978). Differences between entering freshmen from different size high schools. *Journal of College Student Personnel, 19*, 353-358.

Dweck, C. S., & Elliot, E. S. (1983). Achievement motivation. In E. M. Hetherington (Ed.) & P. H. Mussen (Series Ed.), *Handbook of child psychology: Vol. 3. Socialization, personality, and social development* (4th ed., pp. 643-691). New York: Wiley.

Edington, E. D., & Martello, H. C. (1989). Does school size have any relationship to academic achievement. *Rural Educator, 11*(2), 6-11.

Eichinger, J. (1997). Successful students' perceptions of secondary school science. *School Science and Mathematics, 97*(3), 122-131.

Ethington, C. A., & Wolfe, L. M. (1986). A structural model of mathematics achievement for men and women. *American Educational Research Journal, 23*, 65-75.

Fennema, E., & Tartre, L. A. (1985). The use of spatial visualization in mathematics by girls and boys. *Journal for Research in Mathematics Education, 16*(3), 184-206.

Freudenthal, H. (1975). Pupil's achievement internationally compared—The IEA. *Educational Studies in Mathematics, 6*, 127-186.

Garden, R. A.(1989). Students' Achievements: Population B. In D.F. Robitaile & R. A. Garden (Eds.), *The IEA study of mathematics II: Contexts and outcomes of school mathematics* (pp. 126-152). New York: Pergamon Press.

Gerber, S. B. (1996). Extracurricular activities and academic achievement. *Journal of Research and Development in Education, 30*(1), 42-50.

Goleman, D. (1988, April 10). An emerging theory on blacks' I.Q. scores. *New York Times* (Education Life Section), 22-24.

Gonzalez, E. J., Smith, T. A., & Sibberns, H. (1998). *User guide for the TIMSS international database: Final year of secondary school (population 3)*. Chestnut Hill, MA:Boston College.

Gorard, S., Rees, G., & Salisbury, J. (1999). Reappraising the apparent underachievement of boys at school. *Gender and Education, 11*, 441-454.

Greenwald, R., Hedges, L. V., & Laine, R. D. (1996) The effect of school resources on achievement. *Review of Educational Research, 66*(3), 361-396.

Grossin, L. (1991, January). *School climate, achievement and behavior in eight Swedish junior high schools*. Paper presented at the annual meeting of the

International Congress for School Effectiveness and Improvement. Wales. UK. (ERIC Reproduction Service Document No. ED361873)

Hafner. A. L. (1993). Teaching-method scales and mathematics-class achievement: What works with different outcomes. *American Educational Research Journal. 30*(1). 71-94.

Harnischfeger. A.. & Wiley. D. E. (1976). The teaching-learning process in elementary schools: A synoptic view. *Curriculum Inquiry. 6.* 5-43.

Hawkins. J. D. (1997). Academic performance and school success: Sources and consequences. In Weissberg, R.P. & Gullotta. T. P. (Eds.). *Healthy children 2010: Enhancing children's wellness. Issues in children's and families' lives* (Vol 8. pp. 278-305). Thousand Oaks, CA: Sage Publications. Inc.

Heyns. B. (1978). *Summer learning and the effects of schooling.* New York: Academic Press.

Hilton. T. L. & Berglund. G. W. (1974). Sex differences in mathematics achievement – a longitudinal study. *Journal of Educational Research, 67.* 232-237.

Holland. A.. & Andre. T. (1987). Participation in extracurricular activities in secondary school: What is known. what needs to be known? *Review of Educational Research, 57.* 437-466.

Husen. T.. & Postlewaite. T. N. (1967). Intentions and background of the project. In T. Husen (Ed.). *International study of achievement in mathematics* (Vol 1. pp 25-34). New York: John Wiley & Sons.

Keith. T.Z.. & Cool. V. A. (1992). Testing models of school learning: Effects of quality of instruction. motivation. academic coursework. and homework on academic achievement. *School Psychology Quarterly. 7* (3). 207-226.

Lee. V. E.. & Bryk. A. S. (1989). A multilevel model of the distribution high school achievement. *Sociology of Education. 62*(3). 172-192.

Luyten. H. (1994. April). *School size effects of achievement in secondary education: Evidence from the Netherlands, Sweden, and the USA.* Paper presented at the annual meeting of the American Educational Research Association. New Orleans. LA. (ERIC Reproduction Service Document No. ED376559)

Ma. X. (1997). Reciprocal relationships between attitude toward mathematics and achievement in mathematics. *The Journal of Educational Research. 90*(4). 221-229.

Ma. X.. & Kishnor. N. (1997). Attitude toward self. social factors. and achievement in mathematics: A meta-analytic review. *Educational Psychology Review. 9*(2). 89-120.

Marsh. H. W. (1992). Extracurricular activities: Beneficial extension of the traditional curriculum or subversion of academic goals? *Journal of Educational Psychology. 84*(4). 553-562.

Mislevy. R. J. (1991). Randomization based inference about latent variable form complex sample. *Psychometrika. 56*(2). 177-196.

Moore. E.G. J.. & Smith. A. W. (1987). Sex and ethnic group differences in mathematics achievement: Results from the National Longitudinal Study. *Journal for Research in Mathematics Education. 18.* 25-36.

Rotberg. I. (1990). I never promised you first place. *Phi Delta Kappan. 72.* 296-303.

Schmidt, W. H., McKnight, C. C., Cogan, L. S., Jakwerth, P. M., & Houang, R. T. (1999). *Facing the consequences: Using TIMSS for a closer look at U. S. mathematics and science education.* Boston, MA: Kluwer Academic Publishers.

Schommer, M., Crouse, A., & Rhodes, N. (1992). Epistemological beliefs andmathematical text comprehension: Believing it is simple does not make it so. *Journal of Educational Psychology, 4,* 443–453.

Schreiber, J. B. (2002). Institutional and student factors and their influence on advanced mathematics achievement. *Journal of Educational Research, 95* (5), 274-286.

Schreiber, J. B., & Chambers, E. A. (in press). After school pursuits, ethnicity, and achievement for 8th and 10th grade students. *Journal of Educational Research.*

Sherman, J. (1987). *Sex related cognitive differences.* Springfield, IL: Wiley.

Stedman, L. C. (1994). Incomplete explanations: The case of U.S. performance in the international assessments of education. *Educational Researcher, 23* (7), 24-32.

Suydam, M. N., & Weaver, J. F. (1975). Research on mathematics learning. In J. N. Payne (Ed.), *Mathematics learning in early childhood: Thirty seventh yearbook* (pp. 44-67). Reston, VA: National Council of Teachers of Mathematics.

Warrington, M., & Younger, M. (2000). The other side of the gender gap. *Gender and Education, 12,* 493-508.

Wiley, D. E., & Harnischfeger, A. (1974). Explosion of a myth: Quantity of schooling and exposure to instruction, major educational vehicles. *Educational Researcher, 3,* 7-12.

Williams, P., Haertel, E., Haertel, G., & Walberg, H. (1982). The impact of leisure-time television on school learning. *American Educational Research Journal, 19,* 19-50.

Williams, T., & Levine, D. (1999). Unpublished technical report.

Wilson, A. (1995). *Violence and traumatic stress in urban schools.* Occasional Paper Series: Vol. 10, Num. 3. Andover, MA: Regional Laboratory for Educational Improvement of the Northeast and Islands. (ERIC Reproduction Service Document No. ED389830)

# Cognitive Processing, Creativity, Apprehension, and the Humorous Personality

Edgar B. Wycoff and Burt Pryor
*University of Central Florida*

One approach in the definition of a "sense of humor" is to attempt to isolate humor personality traits. The systematic identification of humorous traits, together with the detection of their correlative personality characteristics, could yield a defined humorous personality construct. To contribute toward this end, the present study investigated relationships between 2 humor-related inventories and scales that measure components of cognitive processing, creativity, and communication apprehension. The humor inventories assessed the degree to which an individual uses humor to cope and the frequency with which an individual smiles or laughs. Results showed that being given to smiling or laughing correlated positively with creativity and negatively with communication apprehension, but was not predictive of enjoying effortful thinking.

According to Ruch (1996), at this point in the evolution of humor study, a "comprehensive definition of the sense of humor still remains the supreme but yet unattained goal" (p.250).[1] There is little agreement either in research or in everyday language about what a "sense of humor" is supposed to mean (p.242). On the other hand, we are steadily learning more about the humorous personality. For example, we might expect the humorous person to tell jokes frequently (e.g. Bell, McGhee, Duffey, 1986), laugh heartily at the jokes others tell (Martin & Lefcourt, 1984), and when the "going gets tough," to laugh and make light of difficult circumstances (Martin & Lefcourt, 1983). The identification of a number of additional trait characteristics will be needed for a more distinct image of the "humorous personality" to emerge.

To date, various components of humor have been correlated to such personality traits as interpersonal competence (e.g. Fink & Walker, 1977), social warmth (e.g. Craik, Lampert & Nelson, 1996), cheerfulness, extroversion, (e.g. Köhler & Ruch, 1996), and positive emotional states (e.g. Cann, Holt & Calhoon, 1999).

One way to arrive at what makes up a person's "sense of humor," according to Ruch (1996), would be to describe "the entirety of observable habitual individual differences in humor, investigate their

---

*Author info*: Correspondence should be sent to: Edgar B. Wycoff, Nicholson School of Communication, U. of Central Florida, P. O. Box 161344, Orlando, FL. 32816-1344. 407 823 2882. e-mail: ewycoff@pegasus.cc.ucf.edu.
*North American Journal of Psychology*, 2003, Vol. 5, 31-44.
© NAJP

interrelations in a systematic way, and eventually define a smaller set of traits that account for the differences" (p.240). As Köhler and Ruch (1996) have pointed out, " 'the sense of humor'-construct is a node in a net of personality traits . . ." (p.369). Eysenck and Eysenck (1985) have noted that several habits compose a personality trait and many correlated traits give rise to a personality type that we might describe as humorous. Ruch and Deckers (1993) have stressed the importance of being " . . . able to identify variables that can account for individual differences in the propensity to laugh" (p.212). By discretely identifying each distinguishable component of the humorous personality, like dots forming a picture, a personality-trait construct is likely to emerge which will help in predicting individual humor differences. Ruch (1996) maintained that a personality-approach to humor " . . . should *describe*, *predict*, and eventually *explain* the humor-related differences among people" (p.240).

## The Present Research

Based on the personality-trait approach in defining a humorous personality, the present research assessed three, non-humorous personality variables that could possibly affect humor differences among individuals. They included: (1) cognitive processing style, (2) creativity, and (3) communication apprehension. Two widely-used, self-report humor scales served to measure distinct traits or dimensions of the humorous personality. They included: (1) the *Coping Humor Scale* (CHS), designed to indicate the degree to which an individual uses humor as a means of coping with stressful experiences (Martin & Lefcourt, 1983); and (2) The *Situational Humor Response Questionnaire* (SHRQ), which assesses the frequency with which the individual smiles, laughs, or otherwise displays amusement in a variety of situations (Lefcourt & Martin, 1986). For some time, a combination of the results of these two instruments was probably as close as we could come to a guarded operational definition of the "humorous personality." Recent research collections, such as those compiled by Ruch (1998), more accurately define the concept.

Each of the three non-humorous personality characteristics was examined and their relationship with dimensions of humor was hypothesized.

### Style of cognitive processing and humor

Humor is a cognitive process. Cognitive theories, such as the incongruity-resolution model, are central to the study of humor and appear to have even ancient origins (Attardo, 1997). The relationships between aspects of humor and cognitive processing, comprehension, and intelligence have received considerable attention. Fisher and Fisher

(1983) found that those who tend to use humor are often above average in intelligence. Nilsen, Donelson, Nilsen, and Donelson (1987) have asserted that humor tends to set the mind into modes of thinking that are investigative, seeking, grasping, and filled with trial-and-error. Derks, Gilliken, Bartolome-Rull and Bobart (1997) revealed that the whole cortex seems involved in complex information processing when an individual deals with humor. They also noted that humor appreciation is a high-level skill that requires such complex thought (p. 285). Concluding their investigation of laughter and electroencephographic activity, they added that humor appreciation is a complex information processing task, ". . . incorporating mechanisms of pattern recognition, categorization, meaningful search, and emotionality" (p. 287). McGhee (1976) found that the full appreciation of humor appears closely associated with a degree of cognitive challenge.

Today, as in the past, the concept of pleasure has been associated with both humor and thinking. Freud argued nearly 95 years ago that part of the pleasure derived from humor results from exercising the intellect in trying to understand a joke (Freud, 1960). One of the first to develop theories relating humor to various stages of a child's mental development, Piaget emphasized the pleasure in gaining a sense of intellectual mastery over an event (Piaget, 1962). Apte (1985) referred to "the pleasure derived from the cognitive experience labeled 'humor'" (p. 14). McGhee (1979) defined humor as a form of intellectual play. (p.42).

**Need for cognition and hypothesis 1**

Cohen, Stotland, and Wolfe (1955) conceptualized a specific cognitive predisposition in the "need for cognition" (NC) as a need to understand and make reasonable the experiential world (pp. 291-299). Cacioppo and Petty (1982) developed a scale to measure the tendency for an individual to engage in and enjoy thinking or effortful cognitive activities (pp.116-121). Given the association between cognitive processing and humor established in the research literature, the enjoyment of effortful thinking might be expected to correlate positively with traits of the humorous personality. While need for cognition has been examined in recent years for its connections with consumer responses to humor in advertisements (Zhang, 1996), as well as predictor of appreciation of humor (Staley & Derks, 1995), no study could be found that directly examined need for cognition's correlation with the SHRQ or CHS humor measures. Therefore, to test such a relationship, the present authors proposed ($H_1$) positive relationships between participants' need to engage in and enjoy effortful thinking (NC) and participants' frequency to smile or laugh in a variety of situations (SHRQ) along with their use of humor to cope (CHS).

## Creativity and humor

When people make us laugh, we often think of them as being gifted with the creative genius of comedy. Indeed, humor and comedy depend, in large part, upon invention or the discovery of something new, which is patently creative. Scholars have identified a definite and almost inextricable relationship between the concepts of humor and creativity. For example, works by Koestler (1964), Fry and Allen (1975), and Salameh (1980) have substantiated the creative nature of the process of humor production and its ". . . similarity to the creative processes operating in other forms of artistic expression"(Salameh,1983, p.81). According to Murdock and Ganim (1993) humor or a sense of humor was one of the characteristics that early creativity researchers described in relation to the creative personality (p.58). Fisher and Fisher (1983) contended that "amateur funny people" are often above average in creativity. Stand-up comedians revealed personality profile scores characterizing artistic, creative people (Salameh, 1980). Koestler (1964) argued that "Comic discovery is paradox stated--scientific discovery is paradox resolved" (p.95). Hauck and Thomas (1972) suggested that more creative children are viewed by their peers as having a better sense of humor. McGhee (1979), in summarizing research findings, observed that ". . . more creative individuals are generally more appreciative of humor, understand it better, initiate it more often, and produce funnier material when they are trying to be funny" (p.166). In an inventory of scientific findings on human behavior, the authors reported that highly creative people have a better sense of humor (Berelson & Steiner, 1964).

## Creativity and hypothesis 2

The connection between humor and creativity has been suggested by research and the intuitive opinion of writers. But while several recent studies have examined correlations between humor and widely-accepted creativity measures such as the *Torrance Test of Creative Thinking* (E.P.Torrance, 1966), their humor measures were based on untested constructs or cartoon responses. No investigations were found that probed correlations with established humor scales such as the SHRQ or CHS. The validity of the *Creative Personality Scale* (CPS) (Gough, 1979) was affirmed by 25-year longitudinal tests (Kaduson & Schaefer, 1991). Based on the apparent humor-creativity connection, it was predicted ($H_2$) that the trait of creativity (CPS) would correlate positively with the traits of frequency to smile or laugh (SHRQ) and use of humor to cope (CHS).

## Communication apprehension and humor

Fear, tension and apprehension have been indirectly associated with the humorous experience for years. The expression "comic relief" presupposes stress. Incongruity leading to resolution suggests tension with subsequent relief. Nilsen (1993) described the process:

> When something is incongruous, or when something is mysterious, we feel somewhat tense. When the incongruity is resolved, or when we finally understand the mystery, we feel relief. Tension is a necessary state whenever humor is being developed, and relief is a necessary result after the denouement of the humor (p. 25).

While encountering the unexpected can lead to laughter, it can also lead to fear or apprehension (Hebb, 1946). Rothbart (1996) observed a direct tie between humor and apprehension:

> The close relation of fear and laughter may be observed in a young child on a swing. When the swing is pulled back, the child's eyes are open wide in an expression of apprehension or fear. As the trajectory of the swing proceeds forward and then back again, the child may be seen to be laughing heartily (p. 40).

Similarly, a child being chased by another screams with distress and laughter. Rothbart (1996) concluded that the close relation of laughter and distress suggests the hypothesis " . . . that stimuli effective in evoking fear may also be effective in evoking laughter" (p. 40). The relationship between laughter and apprehension is not new. Many years ago Beattie (1776) observed: "To conceal one's fear, one may feign a laugh . . ."

We might expect, then, measures of trait apprehension in a personality to correlate positively with measures of personalities that tend to laugh in a variety of situations or cope by means of humor. On the other hand, while aspects of humor and laughter in some contexts appear to be positively related to stress or distress, physiological research reveals that they are diametrically opposed: humor tends to relieve stress. Berk et al. (1989), for example, found that immune activity, which typically decreases with stress, increased along with white cell vitality in blood samples while subjects watched humorous programs. Moreover, Martin and Dobbin (1988) reported that subjects scoring high on the SHRQ and the CHS indicated a resistance to the reduction in immune function that usually goes with stress. Researchers have also examined the stress-buffering effects of humor (e.g. Martin & Lefcourt, 1983) and others have revealed relationships between trait humor and positive perceptions of life (e.g. Kuiper, Martin & Dance, 1992).

A number of researchers have reported either an inverse or no relationship between humor and stress or its kin, anxiety. Nezu, Nezu, and Blissett (1988) discovered that anxiety was not particularly affected by frequent use of humor. In another study, the use of humor to cope was associated with higher levels of anxiety and a sense of humor subscale was negatively related to anxiety (Cann et al., 1999).

The personality traits of a communication-apprehensive person appear to be quite opposite to those displayed by a humorous personality. For example, Daly and Stafford (1984) described the communication apprehensive as " . . . a socially anxious individual with tendencies to be lower in self-esteem, less socially oriented, less assertive and dominant, less achieving academically, and more lonely, withdrawn, and self-conscious than a socially nonanxious person" (p.143). Wycoff (1992) found that subjects high in communication apprehension report less enjoyment of effortful cognitive activity, or need for cognition, than low scorers.

**Communication Apprehension and Hypothesis 3**

According to McCroskey (1984), communication apprehension is an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons (p.13). Based upon data collected from his *Personal Report of Communication Apprehension* scale (PRCA), McCroskey argued that communication apprehension could be a "relatively enduring personality-type orientation" (p.16). In view of the contradictory research and opinion regarding just how apprehension, humor, and laughter are linked, if at all, a decisive assessment is necessary to differentiate these components regarding the humorous personality. Since use of humor to cope and frequency to smile and laugh traits have been correlated with traits antithetical to apprehension, such as optimism, self-confidence, and extroversion (Derks, 1996), our hypothesis (H 3) posits that individuals exhibiting high levels of smiling and laughing (SHRQ) and use of humor to cope (CHS) will display low levels of communication apprehension (PRCA).

To summarize, the following correlations were predicted:

$H_1$: Positive correlations between participants' need to engage in and enjoy effortful thinking and (a) the frequency to smile or laugh in a variety of situations and (b) the use of humor to cope.

$H_2$: Positive correlations between participants' trait of creativity and (a) the frequency to smile or laugh in a variety of situations and (b) the use of humor to cope.

$H_3$: Negative correlations between participants' trait of communication apprehension and (a) the frequency to smile or laugh in a variety of situations and (b) the use of humor to cope.

## METHOD

### Participants

A total of 100 undergraduate students (55 female and 45 male) at the University of Central Florida, enrolled in upper-division communication courses, served as participants. Most were juniors and communication majors.

### Procedures

All participants were treated in accordance with APA ethical guidelines. Completion of the questionnaires was treated as any other class assignment for it related in content to both courses. A single packet, containing the SHRQ, the CHS, the CPS, the NC and the PRCA self-report scales were distributed with minimal discussion about content. Participants provided their responses within one hour and were told that they would learn of the results. Participants were debrief at the end of the class session as to what was being measured. The data were analyzed by use of Pearson correlation coefficients.

### Materials

The materials used in the present study were the various personality measures. Each of the instruments had been used extensively in the research literature. The 18-item *Need for Cognition Scale* has been used in numerous information-processing studies, after evidence of predictive validity was furnished by Cacioppo and Petty (1982). The *Adjective Check List* is a widely used personality measure (Gough & Heilbrun, 1983). One of its subscales, the *Creative Personality Scale* (CPS), contains 30 adjectives from which subjects identify characteristics about themselves (e.g., "capable," "sincere," "honest," and "clever"). Eighteen of the adjectives are indicative and 12 contraindicative of the trait of creativity (Gough, 1979) (See Kaduson & Schaefer, 1991 for CPS validation). McCroskey's (1984), *Personal Report of Communication Apprehension* (PRCA) measures personality-type communication apprehension across a variety of contexts. With strong evidence of predictive validity, the PRCA is a 24-item, self-report instrument that measures expressive communication apprehension in group discussions, meetings, conversations, and public speaking (McCroskey, 1984). It uses a 5-interval, Likert-type response format.

According to Martin (1996), approximately 25 empirical studies have now been published using the SHRQ and the CHS. They have been translated in more than 10 languages. The SHRQ is probably the most frequently used humor test in the literature. In a number of given situations, such as seeing an old friend on the street, SHRQ participants are offered options such as: "I would have: not been amused; amused; smiled; laughed; or laughed heartily." While focused on overtly mirthful behaviors, the authors of the SHRQ were well aware it measured only an aspect of humor. The SHRQ does not encompass humor appreciation or an overall sense of humor (Ruch & Deckers, 1993). While several other instruments for measuring various components that make up a sense of humor are available, few have been as widely used or as extensively validated as have the CHS and SHRQ.[2] Correlations between the CHS and SHRQ share some variance but also measure distinct aspects of sense of humor (Martin, 1996).

Several measures of personality traits correlate with scores on both the CHS and SHRQ. The Coping Humor Scale has been shown to correlate positively with such personality traits as self-esteem (Derks, 1996) and general extroversion (Ruch, 1994). The SHRQ has been correlated with positive self-esteem (Derks, 1996); a positive self-concept (Kuiper & Martin, 1993); a positive view of life (Martin et al., 1993); measures of optimism (Korotkov & Hannah, 1994); extroverted laughing (Ruch & Deckers, 1993); general extroversion (Ruch & Deckers, 1993); and sensation seeking (Ruch & Deckers, 1993).

## RESULTS AND DISCUSSION

TABLE 1 Relation between Measures of Humor, Cognitive Processing, Creativity, and Communication Apprehension

| | SHRQ | CHS | CPS | NC |
|---|---|---|---|---|
| SHRQ | | | | |
| CHS | .24* | | | |
| CPS | .24* | .00 | | |
| NC | .01 | .13 | .30* | |
| PRCA | -.32* | -.17 | -.01 | -.07 |

Pearson correlation *r* values
N based on sample of 100 participants
* Correlation is significant at the .01 level (2-tailed).

SHRQ = *Situation Humor Response Questionnaire*; CHS = *Coping Humor Scale*; CPS = *Creative Personality Scale*; NC = *Need for Cognition Scale*; PRCA = *Personal Report of Communication Apprehension Scale*

As shown in Table 1, the expected correlation between the SHRQ and NC ($H_{1a}$) was not significant. As operationally defined by the scales, individuals given to smiling and laughing in a variety of situations do not appear to necessarily enjoy effortful cognitive activities. A non-significant relationship was also obtained between CHS and NC scores ($H_{1b}$), which brings into question the predicted connection between those who enjoy cognitive activities and those who cope using humor. As expected, the correlation between the SHRQ and the CPS scores ($H_{2a}$) was significant ($r = .24$, $p < .01$). This moderate correlation suggests some relationship between one's propensity to smile and laugh in various situations with one's creativity. The CPS did not correlate significantly with CHS ($H_{2b}$), so no connection was observed between the tendency to cope with humor and creativity.

The expected significant negative correlation between the PRCA and the SHRQ ($H_{3a}$) was obtained ($r = -.32$, $p < .01$). This suggests that the communication avoidance tendencies of the communicative apprehensive person may extend to a decreased propensity to laugh or smile. Results did not show the predicted significant negative correlation between the CHS and the PRCA ($H_{3b}$). In accordance with previous research (Martin, 1996), the CHS and SHRQ were found to be significantly correlated in the current study ($r = .24$, $p < .01$). Finally, although not part a formal part of the present research, a moderate correlation ($r = .30$, $p < .01$) was obtained between the measure of creativity (CPS) and need for cognition (NC).

A cognitive association was implied by Lefcourt and Martin (1986) when they noticed that individuals who report smiling and laughter in situations ". . . have developed the sort of mental facility for playing with ideas and perceptions in novel ways that is necessary for humor production . . ." (p. 22). However, that "mental facility" may not, by definition, include effortful thinking. Some have said most humor has an incongruity-resolution structure (Suls, 1983). The absence of any correlation between the SHRQ and the NC might raise questions about the incongruity model as well as cognitive connections with humor in general. Such questions underscore the difficulty in defining "sense of humor" and even in arriving at an accurate description of the humorous personality. Validity is imperiled with attempts to expand assessments beyond the carefully demarcated traits under study. In other words, the current findings are limited to only: those who tend toward expressing smiles or laughs frequently may not be the same individuals who engage in and enjoy effortful thinking

The SHRQ has correlated with a number of humor-related traits, but not all. One of its authors (Martin, 1996) cautioned, "people who laugh and smile frequently may not necessarily have a 'good sense of humor' as many would define it" (p. 254). Martin also warned "the SHRQ does not assess the concept of sense of humor that has to do more with the processing of information and the ability to perceive incongruity in the environment . . ." (p.269). Also, Deckers and Ruch (1992) reported that the SHRQ has been shown not to correlate with funniness ratings of jokes and cartoons. Therefore, the fact that the SHRQ and the NC did not correlate in the present study might simply mean that one discrete component predicting facial expressiveness did not correlate with another predicting cognitive processing. In one study, humorous advertisements were more effective in generating a favorable response from those in an audience low in need for cognition (Zang, 1996). Again, we must reiterate that the SHRQ only measures tendencies toward smiling and laughing behaviors. A high score on the SHRQ might be more suggestive of a higher-emotional rather than a higher-cognitive dimension. A relatively unemotional individual, for example, rated high in the cognitive dimension, might favor and enjoy a dry, sardonic humor without outwardly smiling or laughing. The co-creator of the SHRQ, admits that the cognitive dimension of humor is probably best assessed by means of performance tests, rather than self-reports (Martin,1998). The fact that CHS and the NC are unrelated in the present study may suggest that not only should the trait of coping with humor be treated narrowly, but that validity suffers when the need for cognition trait is generalized to reflect cognitive activity per se. The CHS has been found to be positively related to "realistic cognitive appraisals" (Martin, 1996), but cognitive appraisals might not include enjoying effortful thinking.

As predicted by hypothesis 3a, individuals who tend to smile or laugh frequently are not, according to present results, troubled by communication apprehension. However, the personality trait of coping by use of humor did not appear to mediate effects of communication apprehension one way or another. Both apprehension and humor are multidimensional, so traits should be carefully defined and measurement should be precise. Martin (1996) found that unlike the general state of stress, anxiety occurs in anticipation of expected negative experiences, adding that "Perhaps humor is effective in coping with the effects of past events, but not in coping with the anticipation of aversive experiences" (p.259). Cann et al. (1999) actually found that after exposure to a stress stimulus, those with a high coping humor score (CHS) had higher anxiety (p. 190).

According to present results, those who have a tendency or propensity to smile or laugh also have creative personalities. The earlier observation (Martin, 1996) about the SHRQ reflecting the trait of playing with ideas and perceptions in novel ways is almost a description of creativity. The lack of any connection between the humor coping trait and creativity cannot be explained. Paradoxically, individuals who score high on coping with humor have been found to be able to create more humorous narratives on demand (Martin, 1996).

Finally, with regard to the significant correlation between the SHRQ and the CHS, Martin (1996) noted that while correlations between the two have generally been in the .30 to .40 range, showing that they "... share some variance but also measure somewhat distinct aspects of humor" (p. 257). Cann et al. (1999), who also reported a positive relationship between the SHRQ and CHS, were careful to delimit the CHS "as distinct from a more global liking of humor or humorous behaviors as reflected in other measures such as the SHRQ" (p.190). Thus, the use of humor to cope with stress may, for some individuals, be quite unlike a general tendency to smile or laugh.

The results of the current study, showing positive relationships between the tendency to smile and laugh, creativity, and a low level of communication apprehension, may not appear to contribute appreciably to defining the humorous personality. However, it is one of many small, but necessary steps toward bringing the humorous personality into sharper focus. According to Ruch (1996), an individual's humor style is stable, in that certain behaviors occur habitually in certain individuals and not in others (p.240). The more those behaviors or traits are identified, the sooner we will arrive at a reliable construct of a sense of humor. Future studies should examine a number of other defined personality traits for their correlations with measurements of humor.

In using self-report personality instruments, predictions from the results should be meticulously restricted to only that for which the device was intended to measure. Since most available instruments measure only one of several dimensions of humor, researchers might exaggerate the implications of their findings or readers might infer that a test or measurement defines a general sense of humor when it is designed to reveal only a facet of the concept. Ruch (1996) warns that in the identification of personality traits, researchers must be constantly aware that their findings are " . . . restricted in validity only to the particular, discrete components assessed and should not be generalized to other untested components or a sense of humor per se" (p.245).

While the personality-trait approach, revealed through the use of self-reports, appears justified, it has also been found to be difficult. Validity hinges on the precise measurement of finite components of humor and other personality variables and the careful assessment of their interrelationships. Behavioral observations and performance tests, when they are developed, would certainly offer more predictive results. Until that time, we must continue to investigate every facet of the humorous personality with whatever measures we have available.

## REFERENCES

Apte, M. L., (1985). *Humor and laughter: An anthropological approach* (p.14). Ithaca, N.Y.: Cornell University Press.

Attardo, S. (1997). The semantic foundations of cognitive theories of humor. *Humor: International Journal of Humor Research, 10-4*, 396.

Beattie, J. (1776). On laughter and ludicrous composition. *Essays.*Edinburgh: Creech.

Bell, N. J., McGhee, P. E., & Duffey, N. S. (1986). Interpersonal competence, social assertiveness, and the development of humor. *British Journal of Developmental Psychology, 4*, 51-55.

Berelson, B., & Steiner, G. A.(1964). *Human behavior, an inventory of scientific findings.* New York: Harcourt, Brace & World.

Berk, L. S., Tan, S. A. Fry, W. F, Napier, B. J., Lee, J. W., Hubbard, R. W., Lewis, J. E., and Eby, W. C. (1989). Neuroendocrine and stress hormone changes during mirthful laughter. *American Journal of the Medical Sciences, 298*, 390-396.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*, 116-131.

Cann, A., Holt, K. & Calhoon, L. G. (1999). The roles of humor and sense of humor in response to stressors, *Humor: International Journal of Humor Research, 12-2*, 177-193.

Cohen, A., Stotland, E., & Wolfe, D. (1955). An experimental investigation of need for cognition. *Journal of Abnormal and Social Psychology, 51*, 291-294.

Craik, K. H., Lampert, M. D., & Nelson, A. J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor: International Journal of Humor Research, 9 (3/4)*, 273-302.

Daly, J., & Stafford, L.(1984). Correlates and consequences of social-communicative anxiety. In J. Daly & J. McCroskey (Eds.), *Avoiding communication: Shyness, reticence, and communication apprehension* (p.143). Beverly Hills, CA: Sage Publications.

Deckers, L., & Ruch, W. (1992). The situational humor response questionnaire (SHRQ) as a test of "sense of humor": A validity study in the field of humor appreciation. *Personality and Individual Differences, 13*, 1149-1152.

Derks, P. (1996). Twenty years of research on humor: a view from the edge. Introduction in A.J. Chapman & H.C. Foot (Eds.). *Humor and laughter: Theory research and applications* (p.xvii). New Brunswick: Transactions Publishers.

Derks, P., Gillikin, L. S., Bartolome-Rull, D. S., & Bogart, E. H. (1997). Laughter and electroencephalographic activity. *Humor: International Journal of Humor Research, 10-3*, 285-300.

Eysenck, H. J., & Eysenck, M. W. (1985). *Personality and individual differences: A natural science approach.* New York: Plenum Press.

Fink, E., & Walker, B. (1977). Humorous responses to embarrassment. *Psychological Reports, 40*, 475-485.

Fisher, S., & Fisher, R. L. (1983). Personality and psychopathology in the comic. In P.E. McGhee, & J. H. Goldstein (Eds.). *Handbook of humor research: Volume II applied studies (*p.54). New York: Springer-Verlag.

Freud. S.. (1960). *Jokes and Their Relation to the Unconscious*. New York: Norton.

Fry, W.. & Allen. M. (1975). *Make 'em laugh: Life studies of comedy writers*. Palo Alto. CA: Science and Behavior Books.

Gough. H. G.. & Heilbrun. A. B., Jr. (1983). *The Adjective Check List manual*. Palo Alto. CA: Consulting Psychologists Press.

Gough. H. G. (1979). A creative personality scale for the Adjective Check List. *Journal of Personality and Social Psychology, 37*. 1398-1405.

Hauck. W. E., & Thomas. J. W. (1972). The relationship of humor to intelligence. creativity. and intentional and incidental learning. *Journal of Experimental Education,40*, 52-55.

Hebb. D. O. (1946). On the nature of fear. *Psychological Review, 53*, 259-276.

Kaduson. H. G.. & Schaefer. C.E. (1991). Concurrent validity of the Creative Personality Scale of the Adjective Checklist. *Psychological Reports, 69*, 601-602.

Koestler. A. (1964). *The act of creation* (p.95). New York: the Macmillan Company.

Köhler. G., & Ruch. W. (1996). Sources of variance in current sense of humor inventories: How much substance. how much method variance? *Humor: International Journal of Humor Research, 9 (3/4)*, 363-397.

Korotkov. D.. & Hannah. T. E. (1994). Extroversion and emotionality as proposed superordinate stress moderators: A prospective analysis. *Personality and Individual Differences, 16*, 787-792.

Kuiper. N.. & Martin. R.. A. (1993). Humor and self-concept. *Humor: International Journal of Humor Research, 6*, 251-270.

Kuiper. N.. Martin. R.. A.. & Dance. K. (1992). Sense of humor and enhanced quality of life. *Personality and Individual Differences 13*. 1273-1283.

Lefcourt. H. M.. & Martin. R. A. (1986). *Humor and life stress* (p.22). New York: Springer-Verlag.

Martin. R.A. (1998). Approaches to sense of humor: A historical review. In W. Ruch (Ed.) *The sense of humor: Explorations of a personality characteristic. Humor research series, 3*, (pp. 15-60), Berlin: Mouton de Gruyter. .

Martin. R. A. (1996). The Situation Humor Response Questionnaire (SHRQ) and Coping Humor Scale (CHS): A decade of research findings. *Humor: International Journal of Humor Research, 9 (3/4)*, 251-272.

Martin. R., & Dobbin. J. (1988). Sense of humor. hassles. and immunoglobulin A: Evidence for a stress-moderating effect of humor. *International Journal of Psychiatry in Medicine 18*, 93-105.

Martin. R. A., Kuiper. N. A.. Olinger. L. J.. & Dance. K.A. (1993). Humor. coping with stress. self-concept. and psychological well-being. *Humor: International Journal of Humor Research, 6*, 89-104.

Martin. R. A.. & Lefcourt. H. M. (1983). Sense of humor as a moderator of the relation between stressors and moods. *Journal of Personality and Social Psychology, 45*. 6. 1313-1324.

Martin, R. A.. & Lefcourt. H. M. (1984). Situational Humor Response Questionnaire: Quantitative measure of sense of humor. *Journal of Personality and Social Psychology, 47*, 145-155.

McCroskey, J. C. (1984). The communication apprehension perspective. In J. A.Daly & J. C. McCroskey (Eds.), *Avoiding communication: Shyness, reticence, and communication apprehension.(pp.13-38)* Beverly Hills, CA: Sage.

McGhee, P.E. (1976). Children's appreciation of humor: A test of the cognitive congruency principle. *Child Development 47*:420-426.

McGhee, P. E. (1979). *Humor: Its origin and development* (pp. 10-11). San Francisco: Freeman and Company.

Murdock, M. C., & Ganim, R. M. (1993). Creativity and humor: Integration and incongruity. *Journal of Creative Behavior, 27,* 1, First Quarter, 58.

Nezu, A. M., Nezu, C. M., & Blissett, S. E. (1988). Sense of humor as a moderator of the relation between stressful events and psychological distress: A prospective analysis. *Journal of Personality and Social Psychology, 54,* 520-525.

Nilsen, A., Donelson, K., Nilsen, D. L. F., & Donelson, M. (1987). Humor for developing thinking skills. *Et Cetra, 44,* Spring, 63-75.

Nilsen, D. L. F. (1993). *Humor scholarship: A research bibliography* (p. 247). Westport,CN: Greenwood Press.

Piaget, J. (1962). *Play, dreams, and imitation in childhood.* New York: Norton.

Rothbart, M. K. (1996). Incongruity, problem-solving and laughter. In A. J. Chapman & H. C. Foot (Eds.), *Humor and laughter: Theory research and applications* (p.37-54). New Brunswick: Transactions Publishers.

Ruch, W. (1994). Temperament, Eysenck's PEN system, and humor-related traits. *Humor: International Journal of Humor Research, 7,* 209-244.

Ruch, W. (1996). Measurement approaches to the sense of humor: Introduction and overview. *Humor: International Journal of Humor Research, 9-3/4,* 239-250.

Ruch, W., & Deckers, L. (1993). Do extraverts 'like to laugh'?: An analysis of the Situational Humor Response Questionnaire(SHRQ). *European Journal of Personality, 7,* 211-220.

Ruch, W. (1998). *The sense of humor: Explorations of a personality characteristic.* Humor research series, 3, Berlin: Mouton de Gruyter.

Salameh, W. A. (1980). Personality of the comedian: the theory of tragi-comic reconciliation. Unpublished doctoral dissertation, University of Montreal, Montreal, Canada.

Salameh, W. A. (1983). Humor in psychotherapy: Past outlooks, present status, and future frontiers. In P. E. McGhee & J. H. Goldstein (Eds.), *Handbook of humor research: Volume II applied studies* (p. 81). New York: Springer-Verlag.

Staley, R., & Derks, P. (1995). Structural incongruity and humor appreciation. *Humor: International Journal of Humor Research, 8-2,* 97-134.

Suls, J. M. (1983). Cognitive processes in humor appreciation. In P. E. McGhee & J. H. Goldstein (Eds.), *Handbook of humor research: Volume II applied studies* (p. 39). New York: Springer-Verlag.

Torrance, E.P. (1966). *E.P. Torrance test of creative thinking.* Princeton, N.J.: Personal Press.

Wycoff, E. B. (1992). Apprehension about communication and the Need for Cognition. *Perceptual and Motor Skills, 75,* 1225-26.

Zhang, Y. (1996). Responses to humorous advertising: The moderating effect of need for cognition. *Journal of Advertising, 25-1*. 15-32.

Ziv, A. (1984). *Personality and sense of humor* (pp.148-172). New York: Springer.

---

Footnotes

[1] Ruch (1996) provides an insightful explanation of the pitfalls in measuring and defining the "sense of humor" concept.

[2] Internal consistency analyses of the CHS produced a Cronbach alpha of .61. with corrected item-total correlations ranging from .11 to .54 (Martin & Lefcourt, 1983). The Cronbach alpha values of the SHRQ range between .70 and .85, and its 1-month test-retest reliability was .70. Validity studies are based on observations of facial reactions, peer ratings, and humor production (Ruch & Deckers,1993). Ruch and Deckers, who provide a thorough analysis of the SHRQ, affirm its validity as an "excellent instrument" so long as it is used to predict only that for which it was designed.

*Authors' Note:* Edgar B. Wycoff and Burt Pryor, Nicholson School of Communication, University of Central Florida. The authors wish to thank Chandan Tolaney for assistance with the data collection and processing. A preliminary report of these results was presented by Edgar B. Wycoff at the International Society for Humor Studies Convention, July, 1999 in Oakland, CA.

# Good Work: An Interview With Howard Gardner

Howard Gardner
*Harvard University*

(interviewed on behalf of NAJP by)
Randy Seevers
*University of Houston, Clear Lake*
&
Michael F. Shaughnessy
*Eastern New Mexico University*

Recently, Howard Gardner, Mihaly Csikszentmihalyi and William Damon published a book on "Good Work: When Excellence and Ethics Meet." This book addresses the need to focus on quality work in an age of expediency and bottom line margins. Gardner and his associates have interviewed journalists and geneticists and have discussed products, profits and plagiarism and the implications of modern media on education and information. Calling for decency, democracy and development, the authors outline the need to return to social responsibility, ethics and quality. In this interview Professor Gardner discusses his latest work and replies to questions of concern.

**NAJP:** What exactly is "good work?"

**HG:** Good work is work that is at once excellent in quality and socially responsible: individuals do good work when they are concerned with the implications and applications of their work and try to make sure that the work is used for constructive ends. Bill Damon, Mihaly Csikszentmihalyi, and I are engaged in a large-scale empirical study of good work in various professions. We ask how individuals who want to do good work, succeed or fail in doing so, at a time when things are changing with enormous rapidity and when market forces are extremely powerful. The first phase of our research entailed in-depth interviews with 100 journalists and 100 geneticists. We report the results of this phase in *Good Work: When Excellence and Ethics Meet* (2001).

**NAJP:** How can we encourage excellence in an age of expediency?

---

*Author info*: Correspondence should be sent to: Dr. Michael Shaughnessy, Psychology Dept., Eastern New Mexico U., Portales, NM 88130.

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 47-54.
© NAJP

**HG:** It has never been easy to encourage excellence—that is why the ancient Romans, Greeks, and Chinese developed entire philosophical systems that stressed the development of the individual. In our age, we need to have heroes, role models, mentors who both point out the need for excellence and who personify it in their own existence. Our young people crave heroes—but they will take them from the worlds of entertainment, sports and even crime, unless there are equally convincing ones from politics, business, art and science. As Deborah Meier, famed principal of Central Park East in Harlem says " We've got to be their (the students') Joe DiMaggio."

**NAJP:** In business, Tom Peters has written "In Search of Excellence" and in Education, William Glasser has written "The Quality School and the Quality School Teacher." Why have these concepts not caught on?

**HG:** Of course, the concepts have caught on to some extent or you would not mention them. In America, ideas with wings find a suitable audience, though they rarely dominate our land, which is so large, diverse and complex. The Quality School Movement has clashed with the "back to basic" and "standards movements" which are educationally thin. And Tom Peters did not help his cause when he recently admitted that he fudged some of the data in his book. That is NOT an example of Good Work!

**NAJP:** Why are we sacrificing excellence and ethics for expediency and profit?

**HG:** Market forces have always existed, but usually they are counter-balanced by ideological, religious, governmental, or other equally powerful forces. At least until September 11, market forces had free rein on the United States for several decades. This state of affairs did not prevent ethics and excellence, but it made them optional. People made business "to sell" rather than "to last." The economic downturn and the "attack on America" may change our priorities and mute the pure market forces; it is too early to tell.

**NAJP:** In this age of inclusion and mainstreaming, how can teachers be expected to conduct good work when so many children with handicaps and disabilities are being included in general education classes?

**HG:** This question presupposes that one can't do good work in classes which are mainstreamed. I would agree that it is more challenging to do good work when one has a very diverse population. However, the good worker is often stimulated by challenges: and there is no question that some gifted teachers are able to conduct good work under trying circumstances. The question is: Should policy be based on such rare examples? One must also calculate the cost of not mainstreaming youngsters with handicaps.

**NAJP:** Currently, more and more students are taking on-line classes via the Internet. Will this engender good work and good learning and what impact will it have on education?

**HG:** Technology is morally neutral; one can use satellites to broadcast great music or propaganda. Distance learning works well when one has a prepared audience. However, there are many areas of life where direct human contact is essential. Preschool youngsters need to work with live adults; pre-professionals need to be guided by live mentors. That is where an exclusive reliance on distance learning entails risks.

**NAJP:** Gifted children seem almost intrinsically driven to do good work, and quality work and comprehensive work. Is it something about their genes or their home environment that fosters this drive and motivation?

**HG:** You are being circular here. There are plenty of youngsters who have lots of potential who don't achieve it, or who create mischief or worse. I think that what you want to say is this: students who are considered gifted in school are often motivated to work hard. But this tells us as much about who gets to be labeled gifted as it does about youngsters with potentials for good and evil

Undoubtedly, home environment is very important. One need only look at the outstanding performances of Asian Americans in the United States over the last few decades. No one would attribute their success primarily to their genes; it is due to a belief in effort, a strong work ethic and parents who sit alongside their kids every night.

**NAJP:** John F. Kennedy wrote *Profiles in Courage*. Your book is reminiscent of Kennedy's focus on individuals with great personal conviction to do "the right thing" in spite of opposition. How do we get journalists and geneticists and educators to follow this model?

**HG:** In our book, we suggest three important ingredients of GOOD WORK: 1) Specifying your mission- what are you and others in your profession trying to accomplish? 2) Recognizing role models whom you admire and wish to emulate, and why? 3) Regular taking of the mirror test: when you look at yourself as a worker in the mirror, are you proud or embarrassed? What would the world be like if everyone worked in the way that you do? Only a strong sense of personal mission, standards, and integrity allows individuals to withstand the pressures to which you allude.

**NAJP:** You speak of "levers for good work." What are they and how can your typical professional implement them?

**HG:** Every worker is subjected to certain pressures, often to cut corners or be expedient. The most important thing for a worker is to know the heart of his/her calling or profession and not to deviate from that central mission. Sometimes, one can continue doing one's work, as one believes in it.

If, however, that consistent performance does not work, one has to be prepared to take more extreme measures. This can take the form of a guerrilla action, where one continues to do what one believes is right even if one risks getting fired. One can try to organize one's colleagues to pursue good work. In the most extreme instance, individuals work together to create a new institution, which does embody their values. Margaret Mead said "Never doubt that small groups of committed people can change the world. Indeed, it is the only thing that ever has."

**NAJP:** Teachers are the central figures in our society. How can we train teachers to enjoy "the pleasure of working with scientific materials," get students enchanted with the quality of thinking, get kids involved with the thrill of scientific inquiry and instill a belief that science foregrounds a certain type of rational thinking?

**HG:** If teachers believe these ideas themselves, and if they embody them in their daily practice and interaction with students, then many of their students will get the point. If, however, the teachers only pay lip service to this picture of science, or if they fail to embody this picture in their own daily lives, then, of course, students will not be inspired.

**NAJP:** Superficiality seems to be a watchword of journalists and indeed, many professionals. Why do we abhor an in-depth analysis of issues and concerns?

**HG:** It is not clear whether journalists themselves disdain an in-depth analysis, or whether the public has independently acquired an appetite for gossip, sensationalism or "dumbed-down" news. But the cause does not matter. A true professional journalist will cover what needs to be covered in a thoroughgoing way; and will do it with such panache and brilliance that the audience will be drawn to it. Since September 11, by the way, we have seen a much greater hunger for journalism that features in-depth analysis. This shows that the potential appetite was always there.

**NAJP:** How can we best help professionals to juggle their responsibilities - to society, to others, to their domain, to self and the workplace?

**HG:** Professionals need to take the lead in reforming themselves. That is what a profession is. When doctors refuse to obey HMO's, which limit visits to a few minutes per patient, the HMO's will have no choice but to back down. The rest of us can help by supporting professionals when they lay down reasonable standards of conduct.

As for the balancing of responsibilities—that is something that each of us has to do for himself/herself. We can help and inspire one another, but in the end, this burden involves individual decision and responsibility.

**NAJP:** How does "Good Work" relate to "Frames of Mind" and "Multiple Intelligences" or intelligence in general?

**HG:** Both Mihaly Csikszentmihalyi and I have studied creativity, leadership and intelligence for many years. But we have done so in an amoral way—these traits can be used constructively or destructively (e.g. Goethe and Goebbels; or Mandela and Milosevic). Recently, we teamed up with psychologist William Damon, an expert on moral development. We wanted to see how excellence in the sheer computational sense (A highly intelligent person, for example) can be yoked to a sense of responsibility. We are looking at this question across many professions or domains, which presumably draw upon a variety of human intelligences.

**NAJP:** Facing a massive teacher shortage, how can we do "good work" in training teachers and how can we foster independent learning and professional growth and development?

**HG:** The teaching profession in America has been complexified by a good trend –the potential of women to pursue any career that they want to. Teaching must now compete with professions that are better paying and equally rewarding. It is probably necessary for us to be open to many ways of recruiting teachers, and to realize that gifted individuals may not remain in teaching for decades. Personally, I would favor a much lengthier and better-articulated career ladder, where gifted teachers would be recognized as such, given higher status, more flexibility, and pay equal to other major professions. However, idealism will probably remain a major attracting force in teaching; it remains to be seen whether we are moving towards or away from an idealistic time.

**NAJP:** How do highly ethical journalists, geneticists and yes, educators, such as yourself deal with profit driven "bottom line" supervisors?

**HG:** It's not easy when you have a boss that cares only about the bottom line; and of course, he or she may also have a boss who cares only about the bottom line. Certainly you as a good worker need to have lines that you won't cross; if you don't then you are no different from your boss. If you are asked to do something inappropriate, you should say so in no uncertain terms and explain why. And if "voice" does not work then sometimes, you have to exit.

**NAJP:** Development, decency and democracy are the three " D"'s that you espouse in your book "Good Work." How can education enhance these areas? Do we need "watchdog groups" to monitor education?

**HG:** Development is what education is all about. If at the end of the day we do not have individuals who are developed in a healthy and intellectually alive way, then education has failed. Decency is learned when it is consistently modeled. As for democracy, that requires both modeling on the part of adults and knowledge of the reasons for, and the procedures of, democracy. A democratic society can only work when its members understand its rationale, believe in it and operate on that basis.

**NAJP:** 1984 has come and gone but our "Brave New World" of genetic recombination, gene splicing, stem cell research and cloning are upon us. What guidance can you provide from your interview with geneticists?

**HG:** My colleagues were surprised that the 100 or so geneticists to whom we spoke in 1998-1999 were not much worried about the Brave New World to which you refer. I wonder whether they would respond differently today.

Part of the problem – if you want to call it that - is that geneticists are so excited by their actual work that they have little time to worry about its misapplications. Still it is alarming to me that so few geneticists worry about the misuses of their findings. It falls upon the rest of the society to be guardians and gatekeepers when the geneticists do not rise to the occasion.

**NAJP:** Grade inflation - How can the average teacher engender "good work" without contributing to grade inflation?

**HG:** Good work has nothing to do with grade inflation. Teachers encourage good work when they have clear standards, can explicate them, and can help students to achieve them! Actually individuals do not like feedback that is false or phony or inflated; and so both students and teachers are better off when honest evaluation is provided of what is of high quality and what needs to be improved!

## REFERENCE

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good Work: When excellence and ethics meet*. New York: Basic Books.

Howard Gardner is Hobbs Professor of Cognition and Education, Chairman of the Steering Committee of Project Zero at the Harvard Graduate School of Education, and Adjunct Professor of Neurology at the Boston University School of Medicine. He is the author of eighteen books, including *Frames of Mind, Creating Minds, Leading Minds, Multiple Intelligences and Intelligence Reframed.* He has been honored with the MacArthur "Genius" Award, the University of Louisville Grawemeyer Award and eighteen honorary doctorates. He lives in Cambridge, Massachusetts.

Mihaly Csikszentmihaly is currently Professor at the Drucker School of Management at Claremont Graduate University in Claremont, California and former Professor and Chairman of the Department of Psychology at the University of Chicago. His previous books include *FLOW, Being Adolescent, the Evolving Self, Creativity, Finding Flow*, and *Becoming Adult*. He is currently a member of the National Academy of Education, the American Academy of Arts and Sciences and the National Academy of Leisure Sciences. He currently resides in Claremont, California.

William Damon is Professor of Education and Director of the Center on Adolescence at Stanford University. For the past twenty years, he has written widely on moral development at various ages of human life. His books include *Self-Understanding in Children and Adolescence, The moral Child, Some Do Care* and *The Youth Charter*. He has received various awards from several foundations including the John D. and Catherine T. MacArthur Foundation and the John Templeton Foundation. He currently lives in Palo Alto. California.

# Predicting Persistence among Psychology Majors at an Urban University

Barbara S. Metzner, Joan B. Lauer, & D. W. Rajecki
*Indiana University-Purdue University Indianapolis*

The academic persistence (graduation, or retention) of psychology majors at an urban university was clearly associated with grade point average. Further, using multiple regression analyses, we compared questionnaire responses of incoming students obtained between 1989 and 1991 with rates of persistence in 1997. Two self-report measures emerged as moderate predictors: (1) the certainty of the choice of psychology as the right major, and (2) the importance of preparation for graduate school as a reason for declaring the major. These items apparently reflect a dimension of commitment. Other reasons for choosing psychology--enjoyment of courses, and helping others--although rated highly important as subjective bases for declaring the major, did not predict persistence.

Surely, not all psychology undergraduates progress equally, or graduate, yet we are aware of only one published study on the retention of such majors (Chartrand, Camp, & McFadden, 1992). A variable that is positively related to academic persistence in the general literature involves levels of students' career goals, especially for professions that require a baccalaureate as a stepping stone (Tinto, 1993).

Indeed, several recent studies found that many undergraduate psychology majors aspire to graduate training and professional involvement in the field (Briihl, 2001; Gallucci, 1997; Rajecki, Lauer, & Metzner, 1998), even though actual postgraduate admission rates are low (American Psychological Association, 1996; Borden & Rajecki, 2000). Accordingly, the current project focuses on questionnaire responses about personal reasons for majoring in psychology--including preparation for graduate school--as predictors of persistence.

Our paper reports on the academic outcomes of a sample of students at Indiana University-Purdue University Indianapolis (IUPUI). Between 1989 and 1991, Metzner, Rajecki, and Lauer (1994) identified 445 acceptable applicants for the undergraduate psychology major at IUPUI. A subset of those students (301, or 68%) returned a mailed questionnaire at the time. By November 1997, all applicants had at least six years to complete their requirements. At that point we attempted to determine the

---

*Author info:* Correspondence should be sent to: D. W. Rajecki, Department of Psychology, LD124, IUPUI, 402 N. Blackford St., Indianapolis, IN 46202-3275; e-mail: drajecki@iupui.edu.

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 55-60.

© NAJP

academic history of each. Transcripts obtained in 1997, and the questionnaires returned during the 1989-91 period, provided selected variables for the prediction of persistence.

## METHOD

### Categories of Origin

Metzner et al. (1994) employed transcript information to define incoming majors' academic points of origin. The original labels were "direct entry" (from high school), "internal transfer" (from within IUPUI), "external transfer" (from outside IUPUI), "major elsewhere" (18 hours of psychology elsewhere), "short-term returnee" (one or two semester hiatus), "long-term returnee" (three or more semester hiatus), and "prior degree." In the original report, sex and age were the only reported demographics. At the time (as groups), the direct entry students were the youngest (*M* = 18.0 years), the long-term returnees and prior degree holders were the oldest (*M* = 31.3 years), and the remaining four categories were intermediate (*M* = 21.5 years).

### Main and Questionnaire Samples

In 1997 we located transcripts for 422 of the 445 potential new majors screened in 1989-91. Of these, 57 who matriculated in some other department, and 26 who did not complete a semester at IUPUI, were dropped from the study. Accordingly, the final main sample size was 339, including 90 men. Questionnaires were available for 244 of the 339 individuals (72%) in the current main sample, including 62 men.

Following Metzner et al. (1994), respondent sex was not employed as a variable in the current study.

### Defining Persistence

The 244 students for whom we had a questionnaire and a transcript received scores of 1 to 3 for persistence--students who had graduated by November, 1997: 3 (*n* = 138), others still actively enrolled: 2 (*n* = 22), and others not actively enrolled (dropouts): 1 (*n* = 84). Further, as alternative indexes of persistence we also recorded each student's total number of psychology credit hours completed at IUPUI, and whether psychology was the student's terminal major (yes = 2, no = 1).

### Questionnaire Items Regarding the Decision to Major

*Certainty.* Item #8 in the Metzner et al. questionnaire inquired "How certain are you that you have chosen the right major?" Five check boxes provided end-point anchors of 1 (*totally undecided*) and 5 (*absolutely certain I'll keep this major until graduation*). Intermediate anchors were

2 (*not certain: I'm still somewhat undecided*), 3 (*I think this is what I want, but I might change*); and 4 (*quite certain: doubt if I'll change*).

*Reasons.* Item #7 in the questionnaire inquired "How important was each of the following reasons in your decision to become a psychology major?" Eight possibilities were listed: interest in helping others, good general education, enjoyment of college psychology course(s), faster graduation, ability (better grades) in psychology courses, greater choice of courses, preparation for a job right after *undergrad* degree, and preparation for graduate/professional school. Five check boxes accompanied each reason with end-point anchors of 1 (*never considered*) and 5 (*extremely important*). Intermediate anchors were 2 (*not important*), 3 (*fairly important*), and 4 (*very important*).

## RESULTS

### Main Sample

Table 1 shows questionnaire return rates and average hours completed after admission to the psychology department at IUPUI by the 339 students in categories of incoming majors. The seven categories did not differ in their questionnaire return rates, $X^2_{(6, N = 339)} = 4.32$, ns, and they did not differ in number of psychology hours completed after admission, $F_{(6, 332)} = 0.94$, ns.

TABLE 1 Questionnaire Return Rate, Persistence Rate, and Psychology Hours Completed Before and After Admission to the Dept. for Categories of Psychology Majors in the Main Sample

| | Questionnaire | | | Psychology Hours | |
|---|---|---|---|---|---|
| Category | *N* | Return | Persistence | Before | After |
| Direct Entry | 21 | 76% | 38% | 0.00 | 11.71 |
| Long-term returnee | 32 | 59% | 53% | 8.08 | 16.78 |
| Prior degree | 14 | 86% | 64% | 11.50 | 14.07 |
| Internal transfer | 178 | 73% | 65% | 6.67 | 18.38 |
| Short-term returnee | 26 | 73% | 69% | 9.35 | 17.85 |
| External transfer | 49 | 69% | 74% | 7.32 | 17.18 |
| Major elsewhere | 19 | 74% | 74% | 23.92 | 15.42 |

*Note.* Rows are ordered by persistence percentages. Majors were required to complete 33 hours in psychology.

The 339 students in the main sample were then divided dichotomously: those who had persisted (score of 3 or 2), versus those who had not (score of 1). Resulting rates of persistence by category are also shown in Table 1. Here, category differences emerged to some extent: the direct entry and long-term returnee students showed relatively low rates of persistence. When all seven categories are taken into account, results suggest reliable differences, $x^2_{(6, N = 339)} = 10.88$, $p < .10$.

When the top two, and then the bottom five categories in Table 1 are collapsed into two rows, clearer distinctions emerge, $X^2_{(1, N = 339)} = 8.04$, $p < .01$.

TABLE 2 Personal Reasons for Becoming a Psychology Major: Importance Ratings, Factor Analysis, and Betas for Predicting Persistence for the Questionnaire Sample

| | Importance | | | Factor | | | Persist. |
|---|---|---|---|---|---|---|---|
| Factors & Reasons | M | SD | N | 1 | 2 | 3 | ß |
| Short-term considerations | | | | | | | |
| Choice of courses | 2.62 | 1.15 | 237 | .77 | | | -.015 |
| Faster graduation | 1..92 | 0.92 | 242 | .76 | | | .098 |
| Ability (better grades) | 3.02 | 1.15 | 241 | .75 | | | -.005 |
| Enjoy courses | 4.11[a] | 0.98 | 242 | .55 | | | .074 |
| Long-term considerations | | | | | | | |
| Helping others | 4.43[a] | 0.80 | 243 | | .86 | | -.076 |
| General education | 3.56[a] | 0.99 | 240 | | .51 | | .067 |
| Preparation for a job | 2.75 | 1.15 | 241 | | .51 | | -.064 |
| Preparation for grad school | 3.89[a] | 0.98 | 236 | | | .90 | .234* |

*Note.* Scale anchors ranged from 1 (*never considered*) to 5 (*extremely important*). In the *n* column, sample sizes varied because of missing data. Rows are ordered according to factor loadings.

* $p < .01$

[a] The 95% confidence interval for this mean is above the scale mathematical midpoint of 3.00.

## Questionnaire Sample

For this section, the correlation coefficient ($r$) is reported for relationships between predictor variables themselves, and the standardized regression coefficient ($\mathcal{B}$) is reported for relationships between predictor and outcome variables. Regarding $\mathcal{B}$, several simultaneous multiple regression analyses were performed in which an outcome variable (i.e., persistence, or last major, or psychology hours completed) was regressed on all predictor variables from questionnaires and transcripts. Selected summaries of these analyses are reported in the text and in Table 2.

*Certainty.* Certainty correlated with the importance of preparation for graduate school, $r_{(234)} = .24$, $p < .01$, and enjoyment of courses, $r_{(240)} = .15$, $p < .05$. Certainty also predicted some persistence variables: psychology hours completed, $\mathcal{B} = .191$, $p < .01$, and psychology as the terminal major, $\mathcal{B} = .314$, $p < .01$.

*Reasons.* The importance ratings of the eight reasons for declaring the major were clustered using an SPSS principal component factor analysis (varimax with Kaiser normalization). As shown in Table 2, the analysis identified three groupings that we named short-term considerations, long-term considerations, and preparation for graduate school. The mean ratings and 95% confidence intervals for several of the reasons indicate high levels of endorsement by most respondents. However, as indicated in Table 2, the importance ratings of only one reason reliably predicted persistence (scored as 3, 2, or 1). The graduate school item yielded a $\mathcal{B}$ of .234 with $p < .01$.

**GPA as Predictor**

IUPUI dropouts may have transferred to some other school. But there is one reason to think that many of our dropouts really did not persist. There was a moderately strong association between final GPA and persistence score, $\mathcal{B} = .468$, $p < .01$. That is, students who fared less well generally tended to not persist.

## DISCUSSION

Lowest levels of persistence were seen among students who entered directly from high school, and long-term returnee students (Table 1). We speculate that the direct entry students may have had more opportunities to transfer compared with others, and that long-term returnees--having a history of low persistence--remained at risk.

The measures of (1) certainty of major and (2) the importance of preparation for graduate school appear to tap some concrete aspect of commitment. The term commitment appears frequently in the literature on persistence (cf. Cabrera, Castaneda, Nora, & Hengstler, 1992; Chartrand et al., 1992; Metzner & Bean, 1987). Our data indicate that commitment to graduate school predicts persistence among psychology majors.

What of the remaining seven reasons in Table 2 that did not predict persistence? Those reasons loaded on factors based on content different from the graduate school item (Table 2). Apparently, short-term considerations such as the enjoyment of courses, and long-term considerations such as helping others, do *not* have the attitudinal or motivational features inherent in aspirations for advanced training. Mentors, counselors, and administrators concerned with academic persistence--or its reciprocal: attrition--would benefit from more research on the reasons students major in psychology.

## REFERENCES

American Psychological Association. (1996). *Psychology/Careers for the twenty-first century.* Washington, DC: Author.

Borden, V. M. H., & Rajecki, D. W. (2000). First-year employment outcomes of psychology baccalaureates: Relatedness, preparedness, and prospects. *Teaching of Psychology, 27,* 164-168.

Briihl, D. S. (2001). Life after college: Psychology students' perceptions of salary, business hiring criteria, and graduate admission criteria. *North American Journal of Psychology, 3,* 321-330.

Cabrera, A. F., Castaneda, M. B., Nora, A., & Hengstler, D. (1992). The convergence between two theories of college persistence. *Journal of Higher Education, 63,* 143-164.

Chartrand, J. M., Camp, C. C., & McFadden, K. L. (1992). Predicting academic adjustment and career indecision: A comparison of self-efficacy, interest congruence, and commitment. *Journal of College Student Development, 33,* 293-300.

Gallucci, N. T. (1997). An evaluation of the characteristics of undergraduate psychology majors. *Psychological Reports, 81,* 879-889.

Metzner, B. S., & Bean, J. P. (1987). The estimation of a conceptual model of nontraditional undergraduate student attrition. *Research in Higher Education, 27,* 15-38.

Metzner, B. S., Rajecki, D. W., & Lauer, J. B. (1994). New majors and the feminization of psychology: Testing and extending the Rajecki-Metzner model. *Teaching of Psychology, 21,* 5-11.

Rajecki, D. W., Lauer, J. B., & Metzner, B. S. (1998). Early graduate school plans: Uninformed expectations? *Journal of College Student Development, 39,* 629-632.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.

---

*Note*: We thank Jeffrey Lee Rasmussen for statistical support.

# Relationships between U.S. Social and Economic Hard Times and Popular Motion Picture Actor Gender, Actor Age, and Movie Genre Preferences

Terry F. Pettijohn II
*Mercyhurst College*

Relationships between the social and economic condition in the United States and actor gender preferences, actor age preferences, and motion picture genre classification preferences between the years 1939-1995 were investigated using archival data. Based on the *Environmental Security Hypothesis*, older actors, male actors, and dramas were predicted to be preferred during social and economic hard times. Overall, audiences showed preferences for young actors, male actors, and comedies during social and economical hard times. These outcomes partially support predictions from the *Environmental Security Hypothesis*, and reasons for discrepancies are discussed.

Archival motion picture data provides a useful medium for studying the preferences of Americans across time. Past research (Pettijohn & Tesser, 1999) has found a relationship between facial feature preferences for popular American female actors (but not for popular male actors, Pettijohn & Tesser, under review) and social and economic conditions. However, other motion picture preferences and their relationship to social and economic hard times have not been considered.

According to the *Environmental Security Hypothesis* (Pettijohn & Tesser, 1999), during social and economic hard times, people prefer mature qualities in others to a relatively greater extent than during social and economic good times. These mature features may have communicated attributes such as strength, control, and independence (e.g., Keating, Mazur, & Segall, 1981) during a period when these qualities would have been most desired. Other variables such as actor sex, actor age, and the type of movie may also be preferred during threatening times because these factors may communicate strength, experience, and a focus on serious issues. Consistent with the *Environmental Security Hypothesis*, the current investigation predicted that during social and economic hard times, male actors would be more popular than female

---

*Author info*: Correspondence should be sent to: Terry F. Pettijohn II, Mercyhurst College, Department of Psychology, 501 East 38th Street, Erie, Pennsylvania, 16546-0001 tpettijohn@mercyhurst.edu

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 61-66.

© NAJP

actors. older actors would be more popular than younger actors. fewer comedies would be popular. and more dramas would be popular. as compared to social and economic good times.

## METHOD

### Social and Economic Data Collection

United States unemployment rate. disposable personal income. consumer price index, death rate, birth rate. marriage rate. divorce rate. suicide rate. and homicide rate between 1939 and 1995 were collected.[1] Since a measure of general, societal hard times was desired. a single standardized average of all the social and economic indices collected was most appropriate. Each of the indicators was standardized and the annual percentage change in consumer price index, annual percentage change in disposable personal income, birth rate. and marriage rate were multiplied by negative one so that positive scores on all measures would reflect hard times. All of the standardized scores were then averaged for each year to provide a single *General Hard Times Measure* (as used in Pettijohn & Tesser. 1999). Large *General Hard Times Measure* values therefore represent hard times and small *General Hard Times Measure* values represent good times.

### Movie Actor Age and Gender Preference Data Collection

Continuously since 1932, the Quigley Publishing Company has conducted an extensive poll of movie exhibitors. asking for the biggest box-office draws. The results of this poll are published in the annual edition of the *International Motion Picture Almanac* (Quigley Publishing Company). This poll offers a reflection of the popularity of stars with moviegoers and was determined to be the best. uninterrupted source of this measure. Based on the results of the Annual Quigley Publications Poll. the top 5 most popular American actors for each year between 1939 and 1995 were identified.[2] The age of each of these actors at the time they appeared in the poll and their sex were then determined.

### Movie Genre Preference Data Collection

Using *People Entertainment Almanac*'s (1997) list of the top 5 most popular motion pictures for each year. movie title results from 1939-1995 were identified. These lists were constructed based on the total amount of money (in dollars) the studio collected from movie theater rentals. rather than box-office grosses.

Next. these titles were classified using *The Internet Movie Database*'s <http://www.imdb.com> classification system and counts for the categories of "Comedy" and "Drama" were made for each year.[3] The two genres of interest in the current investigation were "Comedy" and

"Drama," since these categories were directly related to the current predictions.

## RESULTS AND DISCUSSION

Pearson product-moment correlations between the *General Hard Times Measure* and actor gender preferences (number of female actors appearing in the top 5 each year), actor age preferences (average age of top 5 actors each year), and motion picture genre classification preferences for comedies and dramas (counts of each classification in the top 5 each year) between the years 1939-1995 were computed. Results are presented in Table 1.

TABLE 1 Correlations of Annual Preferences and the *General Hard Times Measure*

| | *General Hard Times Measure* |
|---|---|
| Average annual actor age | -.25* |
| Annual number of female actors appearing in the top 5 of the Annual Quigley Publications Poll | -.24* |
| Annual number of comedies appearing in the top 5 of *People Entertainment Almanac's* box-office listings | .40** |
| Annual number of dramas appearing in the top 5 of *People Entertainment Almanac*'s box-office listings | -.13 |

Note: Large values on the *General Hard Times Measure* indicate poor social and economic conditions. $N = 57$. *$p < .08$ **$p < .01$. All tests were two-tailed.

As predicted, fewer popular female actors appeared in the top 5 of the Annual Quigley Publications Poll when the social and economic times were poor. In opposition to the prediction, younger actors appeared in the top 5 of the Annual Quigley Publications Poll when the social and economic times were poor. In addition, more motion picture comedies appeared in *People Entertainment Almanac*'s (1997) listing of the top 5 motion pictures during social and economic hard times. There was no relationship between the number of motion picture dramas appearing in *People Entertainment Almanac*'s (1997) listing of the top 5 motion pictures and the *General Hard Times Measure*. In summary, when societal social and economic conditions were rough, audiences preferred to see movies featuring male actors, people preferred to see movies featuring younger actors, and people preferred to buy tickets to see comedies.

During social and economic hard times, the age preference for younger movie actors and the film genre preference for comedies may be reflections of a desire for more jovial, prosperous themes. During tough times, people may wish to escape the harsh reality of their environmental and psychological conditions by watching a funny film with youthful actors. However, during poor social and economic conditions, people also prefer male actors and past research has determined that audiences prefer mature facial features (relatively small eyes, large chins, thin cheeks) in female actors during these hard times (Pettijohn & Tesser, 1999). Mature qualities, such as stability, competence, and independence, and a strong male figure may comfort people during particularly difficult periods of time, and would therefore be preferred to a relatively greater extent over persons without these features.

These results are not completely inconsistent with the *Environmental Security Hypothesis*. Although movie audiences may have preferred young actors, male actors, and comedies during social and economic poor periods, the stars in these movies may still have possessed mature facial features and mature qualities. For example, the particular roles actors played in these films were not considered in the current investigation. Perhaps these roles may have required actors to play characters more mature than their actual age and undertake mature roles that communicated feelings of security, strength, and experience.

Although there are limitations to archival research, further studies may continue to explore preferences for motion picture genres and actor characteristics. The presence of significant correlations in this investigation offers some evidence of changing preferences across time. These preferences may indicate societal preferences with important implications for interpersonal relationships and a greater understanding of human attribute preferences and environmental influences.

## REFERENCES

*Information please almanac*. (1993-1996). New York: Doubleday.

*International motion picture almanac*. (1933-1963, 1968-1997). New York: Quigley Publishing Co.

Keating, C. F., Mazur, A., & Segall, M. H. (1981). A cross-cultural exploration of physiognomic traits of dominance and happiness. *Ethology and Sociobiology*, 2, 41-48.

Mitchell, B. R. (1993). *International historical statistics: The Americas 1750-1988*. New York: Stockton Press.

*Motion picture herald*. (1970-1972). New York: Quigley Publishing Co.

*People entertainment almanac*. (1995-1999). Boston: Little, Brown and Co.

Pettijohn, T. F. II & Tesser, A. (1999). Popularity in environmental context: Facial feature assessment of American movie actresses. *Media Psychology, 1*, 229-247.

Pettijohn, T. F. II & Tesser, A. (2002). History and facial feature preferences: The eyes have it for women but not for men. Manuscript submitted for publication.

Robertson, P. (1993). *The Guinness book of movie facts and feats* (5th ed.). New York: Abbeville Press.

Steinberg, C. S. (1980). *Film facts*. New York: Facts on File, Inc.

U.S. Bureau of the Census. (1975). *Historical statistics of the United States: Colonial times to 1970.* Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. (1977-1996). *Statistical abstract of the United States*. Washington, DC: U.S. Government Printing Office.

*World almanac and book of facts*. (1993-1996). New York: Newspaper Enterprise Associates.

---

*Author Note*: The author would like to thank Mary Henderson for her assistance in data collection for this project and Brian Jungeberg for his comments on the manuscript.

Notes

1 Unemployment rate was recorded as the percentage of the work-force unemployed. Disposable personal income was recorded as the annual percentage change in the per capita dollar amount of disposable personal income. Consumer price index was recorded as the annual percentage change in consumer price index, or inflation. Death rate was recorded as the number of deaths per 1,000 of the population. Birth rate was recorded as the number of births per 1,000 of the population. Marriage rate was recorded as the number of marriages per 1,000 of the population. Divorce rate was recorded as the number of divorces per 1,000 of the population. Suicide rate was recorded as the number of suicides per 100,000 of the population. Homicide rate was recorded as the number of homicides per 100,000 of the population. Data were taken from *Statistical Abstract of the United States* (U.S. Bureau of the Census, 1977-1996), *Historical Statistics of the United States: Colonial Times to 1970* (U.S. Bureau of the Census, 1975), *International Historical Statistics: The Americas 1750-1988* (1993), *Information Please Almanac* (1993-1996), and the *World Almanac and Book of Facts* (1993-1996).

2 Results of the Annual Quigley Publications Poll were found in the *International Motion Picture Almanac* (1933-1963, 1968-1997), the *Motion Picture Herald* (1970-1972), *People Entertainment Almanac* (1995-1997), the *Guinness Book of Movie Facts and Feats* (1993), and *Film Facts* (1980).

3 *The Internet Movie Database* classified motion pictures as "Action". "Adventure." "Animation." "Comedy." "Crime." "Documentary." "Drama." "Family." "Fantasy." "Film-Noir." "Horror." "Musical." "Mystery." "Romance." "Sci-Fi." "Short." "Thriller." "War." and "Western."

# Effects of Rules on Preference for Reliable Reinforcement in a 5-year old Child

Mark Chambers & Ruth Anne Rehfeldt
*Southern Illinois University, Carbondale*

This reported case study examined a typically-developing 5-year old male's preference for two concurrently available response options, one of which resulted in reliable reinforcement, the other of which resulted in unreliable reinforcement. Choice was examined at three different reinforcer magnitudes. The effects of verbal rules delivered by the experimenter and generated by the participant himself, upon the participant's choice-making, was then assessed. The participant was shown to be most sensitive to differences in reinforcement probability for the two response options at larger reinforcer magnitudes. The experimenter's rules were not effective in altering the participant's choice for the two response alternatives, and he was frequently observed to emit self-rules that conflicted with the experimenter's rules and may have controlled subsequent choice responses.

Specifying the variables which influence choice responding has clear practical relevance. In educational and instructional settings, situations abound in which individuals are forced to choose between two or more response options. For example, individuals have been shown to be sensitive to the reliability with which reinforcement is made available for a particular response option (e.g., Lalli, Mauro, & Mace, 2000). Lalli et al. (2000) showed that children with mental retardation demonstrated a stronger preference for an immediately available, yet unreliable reinforcer (which was available with only a 50% probability), versus a delayed yet reliable reinforcer (which was available with a 100% probability). These results are important, because individuals frequently encounter situations in which teachers, parents, or human services staff are not able to arrange for behavioral consequences with a 100% probability. Such situations are likely to result in aggression or frustration and, at the very least, reduce individuals' tolerance level for response options resulting in unreliable reinforcement.

The influence of verbal rules or instructions on choice responding has been studied only minimally to date. Horne and Lowe (1993) compared the performance hypotheses generated by verbally-competent adult

---

*Author info:* Correspondence should be sent to: Ruth Anne Rehfeldt, Ph.D.Rehabilitation Institute, Mailcode 4609, Southern Illinois University, Carbondale, IL 62901Email: rehfeldt@siu.edu

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 67-74.

© NAJP

subjects in post-experimental questionnaires to their actual performance on concurrent VI schedules. Varied response patterns were observed across subjects, and individual response patterns were shown to coincide with the performance rules that subjects generated. Hence, choice responding may be susceptible to verbal influence. Given the high prevalence of verbal interactions in settings where the establishment of functional choice-making skills is a priority, a more direct examination of the effects of rules on choice responding is warranted. This includes both rules that are provided by experimenters, and rules that a participant generates himself or herself. Such an examination may further specify the extent of verbal control over choice responding.

This case study examined the effects of rules on the choice-responding of a 5-year old child. In a discrete-trial procedure, the participant was required to choose between a delayed reliable and a delayed unreliable reinforcer. Choice responding was examined at three different magnitude levels of reinforcement, in order to explore whether preference for reliable or unreliable reinforcement might change at different reinforcement magnitudes. A baseline phase was first conducted, in which the participant's choice for the two response options at three different magnitude levels of reinforcement was assessed in the absence of instructions. An instructed choice phase was then conducted, in which the experimenter presented a rule as to how to respond prior to each trial. At times, this rule was consistent with the reinforcement contingencies in effect, while at other times, it was not. During all phases, the participant's choice responses were recorded, as were all self-rules that were emitted by the participant. Self-rules were defined as verbalizations that the subject emitted himself as a speaker, which then participated in subsequent control over his responding as a listener (Hayes, Kohlenberg, & Melancon, 1989).

## METHOD

### Participant and Setting

One typically developing 5-year old male, Toby, was the participant. Experimental sessions were conducted in a quiet, secluded room, with both the participant and the experimenter seated directly in front of a small table.

### Interobserver Agreement

A second observer was present during 26% of all sessions. The participant's choice responses were recorded by either checking a column on the data-sheet marked "reliable reinforcer" or a second column on the same data-sheet marked "unreliable reinforcer." If both observers checked the same column, an agreement was recorded. Interobserver agreement was also recorded for the subject's emission of self-rules. If such a statement was emitted, the statement was recorded verbatim on the data-sheet next to the trial on which it occurred. If both observers wrote down the same verbal statement for the same trial, an agreement was recorded. Inter-observer agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements of both observers and multiplying by 100%. Resulting percentages for choice responses and rule statements combined was 96%.

### Experimental Design

An AB design was employed. The first author, who was a Master's student working under the supervision of the second author, served as the experimenter during all sessions. A choice baseline phase was first conducted, followed by an instructed choice phase, in which the effects of rules that were consistent and inconsistent with the reinforcement contingencies in effect were examined.

### Procedure

*Choice baseline.* The purpose of this phase was to assess the participant's preference for two response options, one of which resulted in reliable reinforcement, the other of which resulted in unreliable reinforcement, in the absence of verbal rules or instructions as to how to respond. For both response options, the reinforcer (watching a desired movie that Toby selected before the experiment) was available 15 seconds following the subject's choice response. For the response option resulting in reliable reinforcement, the reinforcer was made available with a 100% probability, but for the response option resulting in unreliable reinforcement, the reinforcer was made available with a 50% probability. Two distinct discriminative stimuli were correlated with each response option: a white block was correlated with the response option resulting in unreliable reinforcement, while a green block was correlated with the response option resulting in reliable reinforcement.

Each session consisted of four forced trials followed by 10 free choice trials. The purpose of conducting forced trials was to ensure that the participant made contact with the contingencies in effect for both response options. On forced trials, the presentation of one of the two discriminative stimuli marked the onset of each trial. The participant was required to touch the stimulus, after which the stimulus was removed, and the subject was required to wait 15 seconds for reinforcer availability. Two forced choice trials were conducted for the response option resulting in reliable reinforcement, and two forced choice trials were conducted for the response option resulting in unreliable reinforcement. For the response option resulting in unreliable reinforcement, one forced trial resulted in reinforcer availability after the 15 second delay, the other forced trial did not result in reinforcer availability. On free choice trials, each trial onset was marked by the presentation of both discriminative stimuli; Toby was required to choose one of them.

The participant was always given the opportunity to watch a movie for a specified duration following his choosing of the green block, the stimulus correlated with reliable reinforcement. Only sometimes was he allowed to watch the movie following his choosing of the white block, the stimulus correlated with unreliable reinforcement, as reinforcement for this response option was available with a 50% probability. The availability of the unreliable reinforcer on each trial was randomly determined through a series of coin tosses prior to each session. If the participant chose the stimulus correlated with unreliable reinforcement and it had been determined that the reinforcer would be delivered on that trial, he was given the opportunity to watch the video for a specified duration following the 15 second delay interval. If Toby chose the stimulus correlated with unreliable reinforcement and it had been determined that the reinforcer would not be delivered on that trial, a "black-out" period followed, during which no programmed consequences or stimuli occurred. The duration of the black-out period was identical to that which was allowed for reinforcer access. A 5 second intertrial interval separated each trial.

Choice sessions were conducted at three different reinforcer magnitude levels. These included 30, 60, and 90 seconds of reinforcer access, as well as a 30, 60, or 90 second black-out period on trials for which reinforcement was not delivered. These differences in reinforcer magnitude allowed for a comparison of preference for reliable versus unreliable reinforcement as a function of reinforcer magnitude level.

All self-rules that the participant emitted were recorded. A self-rule was defined as a verbalization emitted by Toby, which then participated in control over his subsequent responding (see Hayes et al., 1989). For example, the statements "pick green," "I'm sticking with green," and "the way to have fun is to pick green," would all be considered self-rules if the participant did, in fact, choose the green stimulus following such a statement.

*Instructed Choice Phase:* This phase was identical to the choice baseline, except that prior to each free trial, Toby was given the following instructions by the experimenter: "Do you want to have fun? Pick white; white will be fun." A total of eighteen sessions, each consisting of four forced and ten free trials, were conducted. Six sessions were conducted at the reinforcer magnitude level and black-out duration of 30 seconds; six sessions were conducted at the reinforcer magnitude level and black-out duration of 60 seconds; and six sessions were conducted at the reinforcer magnitude level and black-out duration of 90 seconds. These differences in reinforcer magnitude levels allowed for an examination of the effects of rules as a function of reinforcer magnitude.

For the first three sessions at each magnitude level, the instructions were not consistent with the contingencies (i.e., the white block resulted in unreliable reinforcement and hence was not the "fun" choice). For the second three sessions at each magnitude level, the reinforcement contingencies were reversed, such that the green stimulus was now correlated with unreliable reinforcement, and the white stimulus was now correlated with reliable reinforcement. In other words, the instructions that Toby was given now coincided with the actual contingencies. All self-rules that he emitted were recorded. A self-rule was defined in the same way that it had been during the Choice Baseline phase.

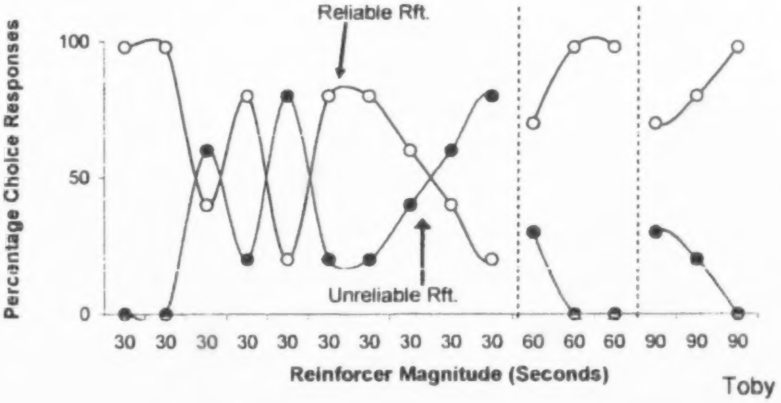

FIGURE 1 Percentage of choice responses for reliable and unreliable reinforcement during the choice baseline, plotted against reinforcer magnitude.

## RESULTS

### Choice Baseline

Shown in Figure 1 is the percentage of choice responses for the response option resulting in reliable and the response option resulting in unreliable reinforcement during the choice baseline phase. The participant's choice percentages are plotted against reinforcer magnitude. Each data point represents the percentage of free choice responses made for each response option during one session, where each session included four forced and ten free choice trials. The figure shows that the participant did not demonstrate a clear preference for either response option when the reinforcer was available for 30 seconds. In fact, preference for unreliable reinforcement increased over the course of the last several sessions. At reinforcer magnitudes of 60 and 90 seconds, much clearer preference for reliable reinforcement is observed. The emission of self-rules was not observed during this phase.

### Instructed Choice Phase

With the exception of the first six sessions, the participant demonstrated near-exclusive preference for the response option resulting in reliable reinforcement. He showed a decrease in preference for reliable reinforcement during the fourth session that the reinforcer was available for 30 seconds. This was also the first session during which the experimenter's rule was accurate. The participant also showed a slight decrease in preference for reliable reinforcement during the fourth session that the reinforcer was available for 60 seconds. This was the first session at this reinforcer magnitude during which the experimenter's rule was accurate. No differences in choice responding as a function of reinforcer magnitude were observed during this phase.

An examination of the verbalizations emitted by the participant suggested that nearly all of the rules he emitted were accurate.

## DISCUSSION

The purpose of this case study was to examine the ability of rules to influence preference for reliable or unreliable reinforcement. Although the experimenter's rules were not shown to be effective in altering the Toby's choices relative to baseline levels, there were, nonetheless, several interesting findings with practical implications. The results from the choice baseline phase of this case study suggest that individuals may be most sensitive to discrepancies in reinforcer probability for two or more concurrently available response options at relatively larger magnitudes of reinforcement. Although the participant, Toby, had been allowed 30 seconds of reinforcer access during the stimulus preference assessment, the his preference for reliable reinforcement was not particularly strong at this reinforcer magnitude. Preference for reliable reinforcement, however, was much stronger at reinforcer magnitudes of 60 and 90 seconds. This finding is important, for it suggests that in educational and instructional settings, teachers or human services staff should do their best to ensure that larger magnitude reinforcers are made available as reliably as possible. Based on the present results, tolerance for unreliable reinforcement can be expected to be quite low in such situations.

Toby's responding was not shown to come under the control of the experimenter's rules. These results suggest that in educational or instructional settings, rules will be effective in influencing choice-making only when they are consistent with the operating reinforcement contingencies. One drawback of this study is that only one participant was used. Future research examining the effects of rules on choice should use a larger number of individuals. A second drawback was that the reinforcer magnitudes did not occur randomly and it is possible that the observed results were due to a sequence effect.

## REFERENCES

Hayes. S.C.. Kohlenberg, B.S.. & Melancon. S.M. (1989). Avoiding and altering rule-control as a strategy of clinical intervention. In S.C. Hayes (Ed.). *Rule-governed behavior: Cognition, contingencies, and instructional control* (pp. 359-385). New York: Plenum.

Horne. P.J., & Lowe. C.F. (1993). Determinants of human performance on concurrent schedules. *Journal of the Experimental Analysis of Behavior, 59*. 29-60.

Lalli. J.S., Mauro. B.C., & Mace. F.C. (2000). Preference for unreliable reinforcement in children with mental retardation: The role of conditioned reinforcement. *Journal of Applied Behavior Analysis, 33*. 533-544.

# Celebrity Worship and Cognitive Flexibility

Matthew M. Martin & Jacob L. Cayanus
*West Virginia University*

Lynn E. McCutcheon
*DeVry University - Orlando*

John Maltby
*University of Leicester*

People that are celebrity worshippers are overly involved with an individual in the media. This study examined the relationship between individuals' cognitive flexibility and their tendency to worship celebrities. Participants ($N = 181$) were instructed to select one of their favorite television personalities (e.g., actor, newscaster, sports anchor, talk show host) and to report their feelings about this person (i.e., celebrity worship). Participants also completed a measure of cognitive flexibility. Cognitive flexibility was negatively related to the celebrity worship dimensions of intense-personal and borderline pathological.

There appears to be a growing interest in celebrities in terms of fans and media coverage (Giles, 2000). There is also growing evidence to suggest that celebrity worship may be of interest to social scientists. Recent research suggests that it occurs more in adolescents or young adults than older persons (Ashe & McCutcheon, 2001; Larson, 1995; Giles, in press); celebrity worshippers are more likely to value a "game-playing" love style (McCutcheon, 2002), and celebrity worship is negatively associated with some aspects of religiosity (Maltby, Houran, Lange, Ashe, & McCutcheon, 2002). Celebrity worshippers report lower psychological well-being than non-worshippers, particularly problems with social dysfunction, depression, and anxiety (Maltby et al., 2001). However, celebrity worship is at best only very weakly associated with shyness and loneliness (Ashe & McCutcheon, 2001).

McCutcheon, Lange, and Houran (2002) proposed an "Absorption-Addiction" model to explain celebrity worship. According to this model, a weak identity structure in some individuals facilitates psychological absorption with a celebrity in an attempt to establish an identity and a sense of fulfillment. The absorption might in turn take on an addictive

---

*Author info:* Correspondence should be sent to: Matthew M. Martin, PO Box 6293, West Virginia University, Morgantown, WV, 26506. Telephone: 304-293-3905. E-mail: mmartin@wvu.edu.

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 75-80.

© NAJP

component, leading to more extreme (and perhaps delusional) behaviors to sustain the individual's satisfaction with the celebrity of one's choice. Several studies based on the Celebrity Attitude Scale ( Maltby, Houran, Lange, Ashe & McCutcheon, 2002; Maltby, McCutcheon, Ashe & Houran, 2001; McCutcheon,et al., 2002) are consistent with this proposed model and suggest that there are three increasingly more extreme sets of attitudes and behaviors associated with celebrity worship. Low levels of celebrity worship have *Entertainment-social* value and are reflected in agreement with statements like "My friends and I like to discuss what my favorite celebrity has done," and "Learning the life story of my favorite celebrity is a lot of fun." This stage reflects social aspects of celebrity worship and is consistent with Stever's (1991) observation that fans are attracted to a favorite celebrity because of their perceived ability to entertain and capture our attention. Intermediate levels of celebrity worship are characterized by more *Intense-personal* feelings, defined by items like "I consider my favorite celebrity to be my soul mate," and "I have frequent thoughts about my celebrity, even when I don't want to." This stage arguably reflects individuals' intensive and compulsive feelings about the celebrity, similar to the obsessional tendencies of fans often referred to in the literature (Dietz, Matthews, Van Duyne, Martell, Parry, Stewart, Warren and Crowder, 1991; Giles, 2000). The most extreme expression of celebrity worship is labeled *Borderline-pathological*. It is shown in items like: "If someone gave me several thousand dollars (pounds) to do with as I please, I would consider spending it on a personal possession (like a napkin or paper plate) once used by my favorite celebrity," and "If I were lucky enough to meet my favorite celebrity, and he/she asked me to do something illegal as a favor I would probably do it." This factor is thought to reflect an individual's borderline pathological attitudes and behaviors that are held as a result of worshiping a celebrity.

There is still a paucity of information about the relationship between specific cognitive variables and celebrity worship. McCutcheon and Maltby (2002) recently found that research participants from both the UK and the USA selected the adjective "foolish" as more characteristic of celebrity-worshippers than non-worshippers. Of course, public perceptions are often inaccurate reflections of reality. Slightly stronger evidence for a cognitive-deficit view of celebrity worship is the fact that one study (Levy, 1979) reported a significant negative correlation ( $r = -.52$) between amount of education and scores on a measure of celebrity adulation. Another study, controlling for age, reported a highly significant negative correlation ($r = -.25$) between amount of education and scores on the Celebrity Attitude Scale (McCutcheon, Lange, & Houran, 2002). Fujii, Ahmed, and Takeshita (1999) recently presented neuro- psychological data from two cases of erotomania and compared these to findings from previous research on erotomania. The two patients evidenced deficits on the *Wisconsin Card Sort Test* (a test of executive functioning) and the *Wechsler Memory Scale-Revised Paired Associates Test*. These results along with scores on other neuropsychological tests suggest deficits in working memory, cognitive flexibility, and the ability to form new verbal associations. McCutcheon, Ashe, Houran, and Maltby (in press) found that those who tended to worship celebrities were likely to have lower scores on cognitive measures such as a creativity test, an information subtest, and a test of critical thinking. Celebrity worship was also negatively associated with the need to use reasoning ability, although the relationship (-.21) fell just short of statistical significance. One of the goals of this study was to further explore the relationship between celebrity worship and cognitive flexibility.

Cognitive flexibility refers to a person's (a) awareness that in any given situation there are options and alternatives available, (b) willingness to be flexible and adapt to the situation, and (c) self-efficacy in being flexible (Martin & Anderson, 1998, 2001; Martin, Anderson, & Thweatt, 1998; Martin & Rubin, 1995). Cognitively flexible people are willing to try new ways of communicating, to encounter unfamiliar situations, and to adapt behaviors to the needs of the context.

People that are flexible are also more interpersonally competent (Parks, 1994). Competent communicators are able to adapt their behavior in order to achieve their personal goals. People that report being cognitively flexible, also view themselves as being assertive, responsive, attentive, and perceptive (Martin & Anderson, 1996, 1998). They also report having greater self-efficacy and self-monitoring skills than people lower in cognitive flexibility (Martin & Rubin, 1995). Martin and Anderson (2001) found that people who were higher in cognitive flexibility were more likely to use affinity-seeking strategies. Earlier research has shown that people who have more affinity-seeking strategies in their repertoires and are able to communicate these strategies are more effective in developing interpersonal relationships (Martin & Rubin, 1998).

Based on these findings and the Absorption-Addiction model, we expected that cognitive flexibility would be negatively related to celebrity worship. Since people high in celebrity worship are believed to have a weak identity structure and seemingly weak interpersonal skills (McCutcheon et al., 2002), we predicted that people who are higher in cognitive flexibility would be less likely to engage in celebrity worship.

## METHOD

### Participants and Procedure

Participants (86 women, 94 men, 1 no report, mean age = 22.29) were currently enrolled in introductory communication courses at a large Midwestern university. Participation was voluntary.

During class time, students were asked to complete a survey that included measures of attitudes toward a favorite celebrity and cognitive flexibility. In completing the celebrity measure, participants were instructed to select one of their favorite television personalities (e.g., actor, newscaster, sports anchor, talk show host) and to respond to each item focusing on that individual.

### Instruments

Celebrity worship was measured using McCutcheon, Lange, and Houran's (2002) *Celebrity Attitude Scale*. This revised scale consists of 23 items on a five-point Likert-type scale; with responses ranging from strongly disagree (1) to strongly agree (5).[1] There are three subscales: entertainment/social (*M* = 20.18, *SD* = 7.64, alpha = .89), intense-personal (*M* = 15.22, *SD* = 6.69, alpha = .92), and borderline pathological (*M* = 7.28, *SD* = 3.03, alpha = .72). High scores suggest that the respondent is a celebrity worshipper.

Cognitive flexibility was measured using Martin and Rubin's (1995) *Cognitive Flexibility Scale*. Participants respond to 12 items using a 6-point scale: strongly disagree (1) to strongly agree (6). Items included: "I can communicate an idea in many different ways." "I am willing to work at creative solutions to problems." "I have the self -confidence necessary to try different ways of behaving." The mean score in this study was 54.68 (*SD* = 6.68). Alpha for the *Cognitive Flexibility Scale* was .80.

## RESULTS AND DISCUSSION

We predicted that attitudes toward a favorite television celebrity would be negatively related to cognitive flexibility. Cognitive flexibility was negatively related to the dimensions of intense-personal ($r = -.22$, $p < .01$) and borderline/pathological ($r = -.17$, $p < .05$), but not with the dimension of entertainment/social ($r = -.06$, $p > .05$). Thus this hypothesis was partially supported.

Cognitive flexibility was related to two of the dimensions of celebrity worship, with the highest significant negative relationship being with intense-personal. Cognitive flexibility was also negatively related to the borderline/pathological dimension. On the other hand, cognitive flexibility was not related to the entertainment/social dimension of celebrity worship. There appears to be a distinction between the intense-personal and pathological aspects of celebrity worship, both of which are characterized by individual aspects of celebrity worship, and entertainment/social, which emphasizes celebrity worship through interactions with friends. Therefore, this finding is somewhat consistent with the *a priori* prediction of celebrity worshipers having poor interpersonal skills; which is emphasized in the intense-personal and pathological aspects of celebrity worship.

In the study linking several cognitive variables to celebrity worship, the combination of all variables was significantly related to all three dimensions of celebrity worship (McCutcheon, et al., in press). However, the creativity measure was the only variable, by itself, which was significantly related ($p < .02$) to scores on the borderline/pathological dimension, and the information measure, which is static, contributed almost nothing. Furthermore, the critical thinking measure yielded the largest beta value (-.23, $p = .09$) when regressed to the intense-personal dimension (McCutcheon, et al., in press). Cognitive flexibility is a primary element of both creative thinking (Huffman & Piggrem, 2003) and critical thinking (Jason, 2001). Thus the present study lends further support to the hypothesis that cognition is negatively related to celebrity worship, and it suggests that cognitive flexibility or fluidity, in particular, may be linked to the more advanced levels of celebrity worship.

---

*Endnote:* [1] There was an error in the wording of one of the entertainment/social items (#15), so this item was not included in any analyses.

## REFERENCES

Ashe, D. D., & McCutcheon, L. E. (2001). Shyness, loneliness, and attitude toward celebrities. *Current Research in Social Psychology, 6*, 124-133. [on-line]. Available: http://www.uiowa.edu/~grpproc/crisp.

Dietz, P. E., Matthews, D. B., Van Duyne, C., Martell, D. A., Parry, C. D., Stewart, T., Warren, J., & Crowder, J. D. (1991). Threatening and otherwise inappropriate letters to Hollywood celebrities. *Journal of Forensic Sciences, 36*, 185-209.

Fujii, D. E. M., Ahmed, I., & Takeshita, J. (1999). Neuropsychologic implications in erotomania: Two case studies. *Neuropsychiatry,Neuropsychology and Behavioral Neurology, 12*, 110-116.

Giles, D. (2000). *Illusions of immortality: A psychology of fame and celebrity*. London: MacMillan.

Giles, D. C. (in press). Parasocial interaction: A review of the literature and a model for future research. *Media Psychology*.

Huffman, K., & Piggrem, G. (2003). *Psychology in action*. New York: John Wiley.

Jason, G. (2001). *Critical Thinking: Developing an effective worldview*. Belmont, CA: Wadsworth.

Larson. R. W. (1995). Secrets in the bedroom: Adolescents' private use of media. *Journal of Youth and Adolescence. 24.* 535-550.

Levy. M. R. (1979). Watching TV news as parasocial interaction. *Journal of Broadcasting, 23.* 69-80.

Maltby. J.. Houran. J.. Lange. R.. Ashe. D.. & McCutcheon. L. E. (2002). Thou shalt worship no other gods - unless they are celebrities: The relationship between celebrity worship and religious orientation. *Personality and Individual Differences. 32*, 1157-1172.

Maltby. J.. Houran. J.. & McCutcheon. L. E. (in press). Locating celebrity worship within Eysenck's personality dimensions. *Journal of Nervous Disease and Mental Disorder.*

Maltby, J.. McCutcheon. L. E., Ashe. D. D., & Houran. J. (2001). The self-reported psychological well-being of celebrity worshippers. *North American Journal of Psychology, 3.* 441-452.

Martin. M. M.. & Anderson. C. M. (1996). Communication traits: A cross-generational investigation. *Communication Research Reports, 13.* 58-67.

Martin. M. M.. & Anderson. C. M. (1998). The Cognitive Flexibility Scale: Three validity studies. *Communication Reports, 11.* 1-9.

Martin. M. M.. Anderson. C. M.. & Thweatt. K. S. (1998). Individuals' perceptions of their communication behaviors: A validity study of the relationship between the Communication Flexibility Scale and the Cognitive Flexibility Scale with aggressive communication traits. *Journal of Social Behavior and Personality, 13.* 531-540.

Martin. M. M.. & Rubin. R. B. (1995). A new measure of cognitive flexibility. *Psychological Reports, 76.* 623-626.

Martin. M. M.. & Rubin. R. B. (1998). Affinity-seeking in initial interactions. *Southern Communication Journal, 63.* 131-143.

McCutcheon. L. E. (2002). Are parasocial relationship styles reflected in love styles? *Current Research in Social Psychology, 7.* 82-94. [online]. Available: http://www.uiowa.edu/~grpproc/crisp/crisp.7.6.html.

McCutcheon. L. E.. Ashe. D. D.. Houran. J.. & Maltby. J. (in press). A cognitive profile of individuals who tend to worship celebrities. *Journal of Psychology.*

McCutcheon. L. E.. Lange. R.. & Houran. J. (2002). Conceptualization and measurement of celebrity worship. *British Journal of Psychology, 93*, 67-87.

McCutcheon. L. E.. & Maltby. J. (2002). Personality attributions about individuals high and low in the tendency to worship celebrities. *Current Research in Social Psychology, 7* 325-338. [on line]. Available: http://www.uiowa.edu/~grpproc/crisp/crisp.7.19.html.

Parks. M. R. (1994). Communication competence and interpersonal control. In M. L. Knapp & G. R. Miller (Eds.). *Handbook of interpersonal communication* (pp. 589-620). Beverly Hills. CA: Sage.

Stever. G. S. (1991). The *Celebrity Appeal Questionnaire. Psychological Reports. 68*, 859-866.

# Moderating Effects of Context on the Relationship Between Behavioral Diaries and Performance Rating Halo and Accuracy

Jerry Palmer
*Eastern Kentucky University*

Adrian Thomas
*Western Kentucky University*

Todd Maurer
*Georgia Institute of Technology*

The present study investigated the interactive effects of behavioral diary use and performance context on the amount of positive halo error present in, and the accuracy of, performance ratings. An evaluatively average target performance was rated in one of 3 separate context conditions: prior good performers, prior poor performers, or no previous performers. Use of behavioral dairies resulted in less halo error when performance ratings were performed in a context-free condition. Halo error was not reduced by the use of diaries, however, if a prior context existed. Use of behavioral diaries led to less accurate ratings when a prior poor performance context existed but did not affect the accuracy in either the context-free condition or the prior good condition.

One method used to assist raters when conducting performance appraisals is behavioral diaries (Maurer, Palmer, & Ashe, 1993). Behavioral diaries are booklets used to record ratee performance behavior for later use by raters. The rationale behind the use of diaries is that by recording ratee performance information, raters can subsequently utilize that information when performing ratings and, thus, be less reliant on whatever memories can be recalled during the rating task.

Some research on behavioral diaries indicates that diaries increase the accuracy of performance ratings and recall of performance-relevant information in both the lab and the field (DeNisi, Robbins, & Cafferty, 1989; DeNisi & Peters, 1992; Maurer, Steilberg, & McCoy, 1991). Other findings, however, indicate that under some conditions diaries may

---

*Author info:* Correspondence should be sent to: Adrian Thomas, Department of Psychology, Western Kentucky University, 1 Big Red Way, Bowling Green KY, 42101 or via email at adrian.thomas@wku.edu

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 81-90.

© NAJP

actually exacerbate the very problems they are intended to fix (Maurer. Palmer. & Ashe. 1993). Maurer (et.al.. 1993) found that behavioral diaries amplified contrast effects in performance ratings. The effects of prior performance judgments on subsequent performance judgments were actually increased by the use of behavioral diaries. In other words. after rating poor (good) performances, raters utilizing diaries gave an average performance more extreme positive (negative) ratings than did raters who did not use diaries. Thus. diaries worsened the contrast error. In contrast. other research has found diaries to reduce halo effects in performance judgments (DeNisi & Peters. 1992). Positive halo occurs when raters use a single general impression of a ratee to make multiple. specific dimensional performance judgments (Lance. LaPointe. & Fisicaro. 1994), with the result being excessive inter-dimensional rating covariation or reduced rating variation across dimensions.

Palmer. Feldman. and Maurer (1998) demonstrated that the conditions producing contrast effects also produce halo and reduce accuracy in performance ratings. It then follows if diary usage amplifies contrast effects. it might also amplify, rather than ameliorate. halo effects and also might reduce rating accuracy. contrary to DeNisi's findings. The present study specifically addressed these issues.

**Contrast, Halo, and Context**

A contrast effect occurs when raters' ratings of a target performance are displaced away from the evaluative level of contextual performance ratings (Maurer & Alexander, 1991). The typical laboratory study on contrast effects utilizes videotaped lecturers as performance stimuli and consists of three conditions: 1) a poor performance context condition in which raters view and rate an average lecturer performance after having viewed and rated poor lecturer performances. 2) a good performance context condition in which good lecturer performances precede the same average target lecturer as used in the poor context condition. and 3) a context-free control condition in which no experimentally-provided performance context exists. and participants view and rate only the average target lecturer. The ubiquitous finding is that the average target lecturer receives good (poor) ratings in a poor (good) context. and receives average ratings when no experimentally-provided performance context exists. From a practical standpoint. contrast effects generally imply inaccuracy in ratings for normative raters (Maurer. Palmer. & Lisnov. 1995) and may occur in interview decisions and performance appraisals where judgments of different individuals are rendered sequentially.

A halo effect (or halo "error") in performance ratings occurs when raters' ratings of a ratee performance vary less and covary more than their hypothetical true scores (positive halo) or vary greater than and covary less than (negative halo) their hypothetical true scores (Balzer & Sulsky, 1992). High positive halo reflects raters' greater use of a single. general impression (i.e., "good" vs. "bad" impression) of a ratee when performing ratings of specific and conceptually distinct. but overlapping, performance dimensions for that ratee (Lance. Lapointe. & Fisicaro. 1994). In other words, raters recall only their general impression of a ratee, and specific performance dimension judgments all reflect this recalled impression. Specific information pertinent to making distinctions between ratee performance levels along different performance dimensions is not recalled and, thus. there is less or no variance among dimension ratings. If the impression is good, the ratee receives all "good" ratings, even though the performance might differ across dimensions, reflecting strengths and weaknesses. From a practical standpoint, positive halo means a reduction in the specificity of performance ratings, making assessment of individual strengths and weaknesses, and thus performance feedback, difficult.

## Context and Attention

Differential attention to context-discrepant behavior has received support as an explanation for contrast effects (Maurer & Alexander. 1991; Palmer, Maurer, & Feldman, in press) and polarization of rater impressions, which results in halo (Palmer, Jennings, & Thomas, 2001). When viewing an average lecturer performance after having viewed good context lecturer performances, raters attend to the poor behaviors exhibited by the average lecturer. When viewing the same average lecturer after having viewed poor performances, raters attend to the good behaviors exhibited by the average lecturer. When no experimentally-provided context exists, raters attend to both good and poor behaviors exhibited by the average lecturer. Maurer and Alexander (1991) and Palmer (et.al., in press) demonstrated this by having raters press buttons (recorded via computer) when they viewed ratee behavior instances that affected their impressions of the lecturer performances; raters attended to behavior discrepant from the prior performance context and ignored context-consistent information. Attention thus predicted rating contrast.

Furthermore, the behaviors attended to contribute to a rater's general impression of a ratee and, if raters have viewed mostly poor behavioral information (good context condition), this impression will be negatively polarized and strong relative to an impression based upon behavioral information of varying quality (i.e., a performance perceived as "average"). When performing ratings later, raters who have a strong and polarized general impression return ratings that are likewise polarized (and less accurate: Maurer, et.al., 1995) and vary little (high halo:

Palmer, et.al., 2001) relative to ratings performed by control condition raters.

**Polarization Effects**

Maurer (et.al., 1993) demonstrated that diaries exacerbate contrast effects. The best explanation for this comes from the work of Tesser (1978) and what is known about group polarization effects on attitudes (Myers & Lamm, 1976). Tesser theorized that moderately extreme attitudes become more extreme with additional thought. Polarization effects occur when group discussion of shared attitudes and beliefs cause the attitudes and beliefs to become more extreme after discussion. In both cases, additional thought, whether personal or socially-induced, results in more extreme cognitions. In Maurer's (et.al., 1993) study, participants were instructed to use the behavioral diaries when performing ratings. If participants attended to, and therefore recorded, mostly poor behavioral information, as was the case in a good performance context, their impressions were poorer after reviewing the information recorded in the diary. The converse occurred for participants who viewed, recorded the behavior of, and rated the average performance in a poor performance context.

Using this notion, Loveland and Palmer (2001) had participants perform ratings either as individuals or as small groups. The group members were asked to discuss their impressions of the lecturers prior to performing ratings. The result was predictable: contrast was greater and halo was stronger for ratings done by participants who had discussed their impressions with other raters.

Given the group discussion effects on halo discussed above, the question of whether diaries increase halo is raised. On one hand, some research suggests that diaries may improve ratings (DeNisi & Peters, 1992; DeNisi, Robbins, & Cafferty, 1989; Maurer, Steilberg, & McCoy, 1991), primarily by reducing memory demands, and reduce halo, primarily by providing specific behavioral information that would not otherwise be recalled from memory by raters. On the other hand, laboratory research (Loveland & Palmer, 2001) and theory (Tesser, 1978) suggest that when a rater has an impression that is already good or poor, diaries might merely serve to further polarize the impression and any resulting ratings. Ratings would vary less resulting in higher halo.

Hypothesis 1a: Use of diaries will exacerbate positive halo when a prior performance context exists.

While we believe diaries will exacerbate halo when an evaluatively polarized prior performance context exists, there is strong evidence that diaries are beneficial when in other situations (DeNisi, Robbins, & Cafferty, 1989; DeNisi & Peters, 1992; Maurer, Steilberg, & McCoy, 1991). If no strong context directing raters' attention exists. then raters should attend to both good and poor ratee behavioral information and thus record a more representative (and accurate) inventory of ratee behavior. The result would be more variation in recorded behavior and. thus. more variation (less positive halo) in ratings.

Hypothesis 1b: When no experimentally provided performance context exists. diary usage will decrease positive halo.

### Rating Accuracy

Maurer (et.al.. 1995) found that a strong. polarized performance context produces inaccuracy in ratings of an average target performance for normative raters. When contrast effects occurred. ratings were displaced away from their hypothetical "true" levels and. thus. became less accurate. Building on this notion. Loveland and Palmer (2001) examined the effects of a strong performance context on ratings and rating accuracy for both individual raters and group ratings. They found that context decreases rating accuracy and that group discussion of ratings exacerbated this effect. It then follows that if group discussion exacerbates context-produced rating inaccuracy. diaries can be expected to do the same. The logic is that both serve to increase the amount of rater processing. Polarized impressions become further polarized. regardless of the reason for the additional processing.

Hypothesis 2a: Use of diaries will result in lower rating accuracy when a prior performance context exists. Again. however. the work of DeNisi and colleagues (DeNisi & Peters. 1992: DeNisi. Robbins. & Cafferty. 1989) suggests that diary usage results in higher rating accuracy.

Hypothesis 2b: When no experimentally provided performance context exists. diary usage will increase rating accuracy.

## METHOD AND RESULTS

### Data

The present study reanalyzed the data originally presented for another purpose in Maurer (et.al.. 1993). Their experiment utilized a 3 x 2 design with 20 participants per condition and with three context conditions (prior good context. prior poor. and context-free control) as well as a diary vs. no-diary condition. In the good context condition. participants viewed and rated two good lecturers followed by an average lecturer. The poor context condition was identical to the good context condition. except that poor lecturers replaced the good lecturers. In the control condition. no experimentally-provided performance context existed. Lecture topics were on hunger drives in rats and the lectures lasted approximately five minutes each. The lecture. lecturer. and lecturer attire were held constant between good and poor context conditions (e.g., only the quality of the lecture differed). Participants in the diary condition were instructed to record observed behaviors immediately after viewing the lecturers and to use that information when performing ratings. Participants in the no-diary conditions performed ratings without using a diary. Ratings were performed via a 7-point, 9-dimension rating scale extensively used in prior research (e.g., Maurer & Alexander, 1991).

### Dependent Measures

Halo was operationalized as the average of the absolute squared deviations of each dimension rating from the mean rating across dimensions. Thus, halo was conceptually defined as the degree to which ratings vary, and low numeric halo scores indicate high positive halo and the use of a single general impression (Palmer, et.al., 2001). This measure was recommended by Balzer and Sulsky (1992) and is appropriate for measuring halo at the individual level of analysis. Differential accuracy (Cronbach, 1955) was measured as the average of the squared deviations of each dimension rating from that dimension's true score, with true scores previously derived (Maurer, et.al., 1995). Thus, accuracy was conceptually defined as proximity to a criterion and low numeric accuracy scores indicate high accuracy.

TABLE 1 Planned Contrast Weights

| | Diary Ratings | | | No-Diary ratings | | |
|---|---|---|---|---|---|---|
| Contrast | PC | C | GC | PC | C | GC |
| 1. Diary vs. No Diary | 1 | 1 | 1 | -1 | -1 | -1 |
| 2. Linear Trend | -1 | 0 | 1 | -1 | 0 | 1 |
| 3. Quadratic Trend | -1 | 2 | -1 | -1 | 2 | -1 |
| 4. Linear x Group | -1 | 0 | 1 | 1 | 0 | -1 |
| 5. Quadratic x Group | -1 | 2 | -1 | 1 | -2 | 1 |

PC= Poor Context: GC= Good Context: C= Control

### Tests of Hypotheses

Planned contrasts were used to test the hypotheses. Weights are presented in Table One (See Table One) and test for 1) an effect of diary usage. 2) linear and quadratic trends in context conditions. with conditions ordered good context, control, and poor context, and 3) the diary by linear and accountability interactions.

*Halo.* For halo, both the linear ($t_{114}$ = 2.578, $p$<.01) and quadratic ($t_{114}$ = 6.172, $p$<.001) trends were significant. The quadratic trend indicates halo is overall stronger for the context conditions, supporting prior research (Palmer, et.al., 1998). The linear trend reflects the fact that poor information exerts a stronger effect on processing, as indicated by the greater halo in the poor context condition, again supporting prior research (Palmer, et.al., 1998). A significant diary by quadratic contrast would provide support for hypotheses 1a and 1b. However, this contrast was non-significant ($p$>.05) as was the diary contrast ($p$>.05) and the diary by linear contrast ($p$>.05).

Less halo occurred in the context-free conditions (Control Diary $\overline{X}$=.89, *SD*=.20; Control No Diary $\overline{X}$=1.1, *SD*=.37) and when participants did not use a diary (Good Context Diary $\overline{X}$=.70, *SD*=.18; Good Context No Diary $\overline{X}$=.72, *SD*=.40; Poor Context Diary $\overline{X}$=.51, *SD*=.26; Poor Context No Diary $\overline{X}$=.57, *SD*=.27). A post-hoc *t*-test comparing diary vs. no-diary halo for the three context conditions separately found significance for the control condition ($t_{38}$ = 1.730, $p$<.05), providing some support for hypothesis 1b; Less halo occurred when diaries are used and no experimentally-provided context manipulation exists.

*Accuracy.* For accuracy, the diary comparison ($t_{114}$ = 2.173, $p$<.05), linear trend ($t_{114}$ = 9.128, $p$<.001), quadratic trend ($t_{114}$ = 4.787, $p$<.001), and diary x linear ($t_{114}$ = 2.398, $p$<.05) trends were significant (Good Context Diary $\overline{X}$=1.86, *SD*=.92; Good Context No Diary $\overline{X}$=1.81, *SD*=1.55; Control Diary $\overline{X}$=2.13, *SD*=2.08; Control No Diary $\overline{X}$=1.96, *SD*=1.41; Poor Context Diary $\overline{X}$=7.61, *SD*=3.37; Poor Context No Diary $\overline{X}$=5.17, *SD*=2.99. Overall, ratings were less accurate when diaries were used. However, this is due primarily to the effect of diary usage on accuracy for the poor context condition. The significant linear and quadratic trends also reflect this. A poor context produced inaccuracy in ratings, consistent with prior research (Maurer & Alexander, 1991) and diaries exacerbated this inaccuracy, as reflected by the significant diary x quadratic trend, supporting hypothesis 2a. Accuracy did not differ between diary and no-diary context-free conditions and, thus, hypothesis 2b was not supported.

## DISCUSSION

Hypothesis 1a, that halo would be exacerbated by diary usage when a strong performance context existed, was not supported. The most likely explanation for this is the strong effect of the context experimental manipulation on rater impressions. In other words, the effect of the strong, polarized context performances on raters' impressions of the target performance was profound, diary or no diary. On the other hand, hypothesis 1b was partially supported by a specific post-hoc test: Diary usage significantly reduced halo in the control condition. This finding is consistent with the research of DeNisi and colleagues (DeNisi & Peters, 1992, 1991; DeNisi, Robbins, & Cafferty, 1989), at least for performances that are not already slightly polarized. If raters' impressions are average in nature and not already good or poor, diaries decrease positive halo.

Hypothesis 2a was supported while hypothesis 2b was not; When a poor performance context existed diaries made rating accuracy worse. The decrease in accuracy, however, occurred only for the poor context condition. Decreasing accuracy when a poor performance context exists is likely due to the strong contrast effect in ratings produced by the poor context. Poor contextual information has a disproportionate effect on processing (Skowronski & Carlston, 1989; Taylor, 1991) and produces greater contrast of target performance ratings relative to good contextual information (Maurer & Alexander, 1991). As ratings of the average target lecturer were shifted away from their "true" average level, accuracy decreased. Diary use did not improve accuracy for the context-free condition ratings. A floor effect is the most likely explanation, as accuracy was very high in this condition, relative to the context conditions, and thus little room for improvement existed.

Overall, our findings both agree with those of DeNisi and also partially support the hypotheses and the findings of Maurer and colleagues. When no experimental manipulation existed, diaries decreased positive halo, indicating that behavioral diaries can serve to improve performance ratings, primarily by increasing the detail and quality of performance feedback. By using diaries raters can rely on specific, recorded behavioral information and less on their memories, of which virtually only a general impression remains after time-produced decay has occurred (Kozlowski & Kirsch, 1987). When no context exists, ratings performed without diary use will have higher halo.

In the present study raters performed ratings immediately after viewing the performances, and the diary-produced difference in halo between context-free conditions was significant. Thus, this effect may be even stronger in some applied settings where a greater amount of time might separate observation of behavior and rating. In other words, diary use will offset the effects of memory decay and consequent increased halo-producing general impression use.

Our findings, however, suggest that diaries increase positive halo and decrease accuracy when raters' impressions are primarily good or poor. In other words, when a rater has a polarized impression of a ratee, additional thought will further polarize that impression, resulting in a greater contrast effect, with decreasing accuracy in a poor performance context, and a stronger halo-producing general impression when either a good or poor performance context exists. In short, diaries increase the intensity of processing while maintaining the direction (Tesser, 1978; Kunda, 1990).

An obvious limitation of our study is that we used laboratory data to generalize to an applied setting, although strong arguments exist that the cognitive processes occurring in the laboratory are the same as those occurring in the field (Funder, 1987). For example, DeNisi (et.al., 1989) found that diary use resulted in more accurate recall and ratings in a laboratory setting. DeNisi and Peters (1992) then extended this research to a real-world setting, demonstrating in two organizations that diary use resulted in better recall of behavior and improved rater ability to distinguish between ratees. Future research should determine whether diaries both improve and worsen real-world performance ratings, depending on raters' pre-existing impressions of ratees and the performance context in which ratings are performed. Maurer (et. al., 1993) and the results of the present study suggest that this would be the case.

A strong, polarized performance context is certainly not the only condition that might direct and polarize raters' attention and impressions of ratees. The goals of the organization, the purpose of the performance appraisal, and the motives of the rater are three such examples. When such conditions narrowing raters' attention to behavior and/or increasing thought pertaining to a homogenous (good or poor) subset of ratee behavior exist, the potential negative effects of diaries on performance judgments should be considered.

## REFERENCES

Balzer, W.K., & Sulsky, L.M. (1992). Halo and performance appraisal research: A critical examination. *Journal of Applied Psychology, 77(6),* 975-985.

Cronbach, L.J. (1955). Processing affecting scores on "understanding of others" and "assumed similarity." *Psychological Bulletin,* 52, 177-193.

DeNisi, A.S., Robbins, T.L., & Cafferty, T.P. (1989). Organization of information used for performance appraisals: Role of diary-keeping. *Journal of Applied Psychology, 74(1),* 124-129.

DeNisi, A.S., & Peters, L.H. (1992). *Diary keeping and the organization of information in Memory: A Field Experiment.* Presented at the 7th Annual Conference of the Society for Industrial and Organizational Psychology, Montreal.

Funder, D. C. (1987). Errors and mistakes: Evaluating the accuracy of social judgment. *Psychological Bulletin, 101(1),* 75-90.

Kozlowski. S.. & Kirsch, M. (1987). The systematic distortion hypothesis. halo. and accuracy: An individual-level analysis. *Journal of Applied Psychology, 72(2),* 252-261.

Kunda. Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108,* 480-498.

Lance. C.E.. LaPointe, J.A.. & Fisicaro. S.A. (1994). Tests of three causal models of halo rater error. *Organizational Behavior and Human Decision Processes, 57,* 83-96.

Loveland. J.. & Palmer, J. (2001). *Group Polarization and Interview Decisions: Contrast Effects Revisited.* Presented at the 16th Annual Conference of the Society For Industrial and Organizational Psychology, San Diego. CA.

Maurer. T.. & Alexander, R. (1991). Contrast effects in behavioral measurement: An investigation of alternative process explanations. *Journal of Applied Psychology, 76(1),* 3-10.

Maurer. T.. Palmer, J., & Ashe. D. (1993). Diaries. checklists. evaluations. and contrast effects in measurement of behavior. *Journal of Applied Psychology, 78 (2),* 226-231.

Maurer. T.. Palmer, J., & Lisnov. S. (1995). Distinguishing context effects from context errors in judgments of behavior. *Journal of Applied Social Psychology, 26(18),* 1637-1651.

Maurer. T.. Steilberg, C., & McCoy. J. (1991). *Effects of Reviewing Prior Performance Information Immediately Before Subsequent Evaluations.* Presented at the 99th Annual Convention of the American Psychological Association. San Francisco.

Myers. D.G.. & Lamm. H. (1976). The Group polarization phenomenon. *Psychological Bulletin, 83,* 602-627.

Palmer. J.. Feldman, J., & Maurer. T. (1998). *Contrast, Halo, and Accuracy: Systematic Relationships Explored.* Presented at the 13th Annual Conference of the Society for Industrial and Organizational Psychology. Dallas. TX.

Palmer. J.K.. Maurer, T.J.. Feldman. J.M. (in press). Context and Prior Impression Effects on Attention. Judgment Standards. and Ratings: Contrast Effects Revisited. *Journal of Applied Social Psychology.*

Palmer. J.. Jennings, T.. & Thomas. A. (2001). *Processing Speed Mediates the Relationship Between Context and Halo.* Presented at the 13th Annual Conference of the American Psychological Society. Toronto.

Skowronski. J.J.. and Carlston. D.E. (1989). Negativity and extremity biases in impression formation: A review of explanations. *Psychological Bulletin, 105(1),* 131-142.

Srull. T.J.. and Wyer, T.K. (1989). Person memory and judgment. *Psychological Review. 96(1),* 58-83.

Taylor. S.E. (1991). Asymmetrical effects of positive and negative events: The mobilization-minimization hypothesis. *Psychological Bulletin,110(1),*67-85.

Tesser. A. (1978). Self-generated attitude change. In L. Berkowitz (Ed.) *Advances in Experimental Social Psychology* (Vol 11. pp. 290-338). San Diego. CA: Academic Press.

# Adolescents as Peer Data Collectors: An Exploratory Study

Gwendolyn J. Adam
*Baylor College of Medicine*
and

Constance M. Wiemann
*Baylor College of Medicine*

Primary determinants of adolescent physical and mental health involve participation in a variety of health risk behaviors (Center for Disease Control, 2000). Adolescent self-report about participation in such behaviors informs a variety of national, regional and local efforts to promote healthy youth development. The purpose of the current study is to explore whether a data collection method that employs adolescents as collectors of data from peers is a viable method for use in survey and behavior research studies involving adolescents. We reviewed individual participant program files generated by adolescents who participated in a series of experiential, psycho-educational groups designed to develop leadership skills among high-school aged adolescents. Eight-hundred thirty-seven anonymously completed youth surveys were collected by adolescent group participants as part of an experiential exercise where youth, as leaders, ask peers to complete a survey to better help adults understand teens and their points of view. Analysis of returned surveys indicated that 772 (92%) of respondents completed all closed-ended items, while 816 (97%) completed all open-ended items. Content analysis of open-ended survey items revealed that the majority of responses could be categorized, signifying that the data were of high quality. These results provide preliminary support for the utilization of peers in the collection of data from adolescents.

Primary determinants of adolescent health and mental health involve participation in a variety of health risk behaviors (Center for Disease Control, 2000). Adolescent self-report about participation in such behaviors informs a variety of national, regional and local efforts to promote healthy youth development. However, recent research documents that adolescent participation in research is, at times, limited by traditional data collection methods. Research on data collection methods used with adolescents reports ongoing limitations, resulting in

---

*Author info:* Correspondence should be sent to: Gwendolyn Adam, Ph.D., Dept. of Pediatrics, Baylor College of Medicine, Texas Children's Hospital, 6621 Fannin, CC610.01, Houston, TX 77030

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 91-104.
© NAJP

questionable data quality, as well as ongoing barriers to accessing adolescents for participation in research. Numerous studies highlight perceived confidentiality or anonymity as an important influence on whether adolescents participate as subjects in research (Bjarnason & Adalbjarnardottir, 2000; Michaud, Narring, & Ferron, 1999; Sonenstein, 1997). Adolescents participating as research subjects also report concern regarding consequences of revealing controversial behaviors (Gmel, 2000; Grube, 1997; Supple, Aqulino, & Wright, 1999). Consequently, the current study conceptualizes adolescent participation as subjects in research as an "adolescent-perceived risk," or "risk behavior" for adolescents. Conceptualizing adolescent participation as subjects in research as a perceived risk / risk behavior provides an innovative framework for the exploration of an alternative data collection method to be used with this population, namely, the use of adolescents themselves to collect data from their peers.

Two key areas of research on adolescents and their peers provide empirical support for a focus on peers as a potential link to adolescent participation as subjects in research. The first area demonstrates the important influence of peers in adolescents' participation in risk behaviors. The second establishes the precedent of using peers as an effective method to influence adolescent behavior, which is strongly grounded in existing literature on adolescent peer-based interventions.

The importance of peers in the day-to-day existence of adolescents has been well documented. An examination of the literature describing adolescent peer influences and support highlights the often ambivalent role of peers in the lives of adolescents ( Oyserman, 1993; Ungar, 2000). Documenting their role in emotional and psychological function, their influence on behavior and decision-making, and the nature of peer associations, the literature provides evidence that peers indeed impact adolescents in a variety of ways ( Brown, Eicher, & Petrie, 1986; La Greca & Lopez, 1998; O'Brien & Bierman, 1988). The nature of peer associations also points to overall functioning of adolescents and provides critical information regarding their sense of self-acceptance, social standing, and need for intervention (Brown & Lohr, 1987; Mann, Harmoni, & Power, 1989; Scholte, van Aken, & van Lieshout, 1997). There is also evidence that youth can accurately assess the functioning of their peers through recognition of others' peer associations (Schneider, 1999). Finally, studies suggest a direct link between peers and adolescent participation in risk behaviors, the differential importance of peers over adults in relation to decisions about participating in risk behaviors, and the diverse nature of these two groups' influences in the lives of adolescents (Aloise-Young, Graham, & Hansen, 1994; Cowdery, Fitzhugh, & Wang, 1997; Jackson, 1997; Pombeni, Kirchler, & Palmonari, 1990).

The second key area of research documents the use of peers as a way to influence adolescent behavior across a number of areas impacting adolescent health and participation in risk behaviors. It also provides a strong rationale for the inclusion of this peer-based method in programs developed for adolescents (Millburn, 1995; Turner & Shepherd, 1999). Studies compare effects of adolescent peer-involved programs with adult-based programs involving adolescents (Prince, 1995), and indicate how peer-involved programs impact adolescent behavior (Black, Tobler, & Sciacca, 1998; Posavac, Kattapong, & Dew, 1999; Wiist, Jackson, & Jackson, 1996). Additionally, existing research documents the utility of adolescent peer-involved methods in generating information on and from adolescents (Boehm, Schondel, Ivoska, Marlowe, & Manke-Mitchell, 1998; Boehm, Schondel, Marlowe, & Manke-Mitchell, 1999; Oppong-Odiseng & Heycock, 1997). Studies also support the use of adolescent peers in obtaining accurate information on teen concerns and issues (Jacobson, Wilkinson, & Owen, 1993:), and accessing the most difficult to reach sub-populations of adolescents (Connor, Ling, Tuttle, & Brown-Tezera, 1999).

When combined, these two broad areas of adolescent peer research provide the empirical support necessary to not only link peer influences to risk behaviors among adolescents, but also to view adolescent peers as a viable option in accessing adolescents for the purpose of information exchange. The adolescent peer literature supports the development of an adolescent peer-involved alternative to traditional data collection methods used with adolescents.

The current study examines the use of a data collection method that employs adolescents as collectors of data from peers for use in survey and behavioral research studies involving adolescents. The viability of this method is explored in three ways: 1) the observed response rate in a community-based, adolescent peer data collection activity in which adolescents collect data from other adolescents using survey methods; 2) the quality of the data collected in terms of the percentage of completed items across surveys collected; and 3) results of content analysis of qualitative data generated by these surveys. The findings may begin to address the concerns regarding quality of data and explore the efficacy of using adolescent peers to increase access to the adolescent population for research participation.

## METHOD

### Participants

Participants for this study came from a community-based, state-funded program directed by the first author (G.A.) and designed to develop leadership and life skills among at-risk female adolescents from primarily ethnic minority backgrounds. The 18-week experiential leadership program was conducted in a large public high school outside a metropolitan city in the south, in a community recognized as ethnically diverse, with high levels of extreme economic deprivation. During four separate adolescent leadership groups conducted during the Spring and Fall of 2000, each of the adolescent group members was invited to participate in a voluntary activity that involved collecting peer opinions using a survey generated through program participant ideas in previous group sessions. A total of 74 youth participated in the group sessions where the youth survey activity was administered. Of these 74, a total of 39 youth voluntarily participated in the collection of data from their adolescent peers. Their efforts resulted in a total of 837 completed surveys collected from peers within one week of the assigned activity. Collected surveys resulting from group members' data collection efforts were placed in each member's program files for later review.

### Materials

Data for the study were collected via a program file review of existing materials generated through the psycho-educational groups for adolescent females. The survey used to collect data from peers was generated with youth input regarding item topics and item wording during youth leadership groups prior to the initiation of this study. The survey contained three closed-ended questions eliciting information about gender, age, and race / ethnicity. The survey also contained seven open-ended statements to which youth could respond, with a focus on helping adults understand teens and their experiences. Open-ended survey items included: 4) "When people my age need help they;" 5) "You can tell teens really need help when;" 6) Adults can help teens by;" 7) :"Adults can gain teens' trust by;" 8) "The most important thing adults should know about being a teen is;" 9) The hardest thing about being a teen is:" and, 10) "The best thing about being a teen is."

### Design and Procedure

The study was an exploratory, cross-sectional study employing secondary data analysis. Data sources included program files containing information collected during community-sponsored, school-based leadership education groups for 74 adolescent females. Materials reviewed included demographic information and responses to open-ended items.

Instructions for the data collection activity in which group participants collected data from peers were given by group leaders who were Master's-level social workers. Adolescent group participants were asked to take as many blank survey forms as they desired for the duration of a one-week activity. They were told that the parameters of the activity included that they must only ask their peers, defined as other youth ages 14-21, to complete the surveys, and that they must ensure that the individuals they asked had not yet completed such a survey for someone else. They were also instructed not to force anyone to complete the surveys and that no names should be recorded on completed surveys. Group members who decided to participate were given as many blank forms as they desired to collect anonymous survey responses from peers not formally involved in the leadership-training program. Group participants returned peer-completed surveys to group leaders after one week. These anonymous peer surveys were placed in the program files of individual group members who collected them. The data collection protocols used in this study were approved for use by the Internal Review Boards at Baylor College of Medicine and the University of Houston. All materials reviewed were de-identified. All surveys collected by peers were done so anonymously, to minimize threat to subject privacy.

The survey was provided in Spanish and English to allow for responses in the language most comfortable for individual participants. Spanish survey responses were translated from Spanish to English, and spot-checked for accuracy by a second bilingual reviewer. All survey data were entered into a spreadsheet for content analysis and coding and demographic data were also entered into the spreadsheet. Three independent, Master's-level social work reviewers, established categories, coded qualitative data and recorded frequencies using established content analysis data coding procedures (Creswell, 1998; Grinnell, 2001; Rubin & Babbie, 1997). The three coders independently generated themes and subsequent categories, labeling the majority of youth responses to open-ended survey items. Per the data analysis plan, a final meeting was held with all three coders upon the completion of individual coding efforts, where overlap in and similarities among resulting data analysis codes were presented and discussed. Overlapping and complimentary codes were distilled into a list of non-repetitive codes that captured primary themes identified by the coders (Creswell, 1998; Brun & Rapp, 2001; Rubin & Babbie, 1997). These summary codes were entered into SPSS. For open-ended items where multiple responses were given, individual responses were later grouped using the SPSS Multiple Response Set procedure for an analysis of content codes and their frequency of use.

Results of the data collection process, in terms of the number of surveys completed and quality of data collected, and demographic representation of participant pool are presented. Variables addressing the degree to which each survey was completed, or completion quality, were generated. This consisted of recording the number of incomplete items found on each survey, and separating the types of incomplete items into the variables "# incomplete closed ended" and "# incomplete open-ended." This included all items left completely blank, as well as items where responses were illegible or un-interpretable for coding purposes. The "Closed Ended' items included the variables gender, age, and race, with choices for youth to circle or otherwise select. The "Open Ended" items were statements to which youth could respond regarding teen experiences, relationships with adults, and attempts to obtain help when needed. Additionally, content themes generated from the surveys related to the use of peers are also presented to further evaluate the proposed adolescent peer data collection method.

## RESULTS

### Demographic Characteristics

Of the 837 youth who completed anonymous surveys, 57% indicated they were female (*n*=475), 37% were male (*n*=308) and 6% of the surveys were missing gender information (*n*=54). The majority of participants self-identified as Hispanic (75%, *n*=629), followed by African American (8.4%, n=70), Caucasian (5.3%, *n*=44), Asian (4.7%, *n*=39) and Other (5%, *n*=42). A total of 13 participant surveys had missing data on this item. A total of 590 surveys were completed in English (71%), while the remaining 247 (29%) were completed in Spanish. Table 1 presents cross tabulation summary of youth participants by gender and race. The table includes only cases where both gender and race variables were completed (92.1%, *n*=776).

TABLE 1 Number of Completed Surveys by Participant Gender & Race

| | African American | Hispanic | Asian | Caucasian | Other | Total (valid) |
|---|---|---|---|---|---|---|
| Female | 37 | 363 | 22 | 28 | 20 | 470 |
| Male | 26 | 234 | 13 | 15 | 18 | 306 |
| Total | 63 | 597 | 35 | 43 | 38 | 776 |

### Completion Variables

Of the total 837 youth surveys, 772 (92%) completed all closed-ended items (Table 2). Fifty-nine surveys (7%) contained one incomplete closed-ended item, while five surveys (0.6%) contained two incomplete closed-ended items and one survey (0.1%) contained three incomplete closed-ended items. In assessing the completion of open-ended survey items, statements to which youth responded in narrative form, a similar completion pattern emerged, with a total of 816 (97%) surveys containing no incomplete open-ended items (Table 2). This indicates a very high overall rate of completed items across both variables. Thirteen surveys (1.6%) contained one incomplete open-ended item, two surveys contained two incomplete items, one survey contained three incomplete items, three surveys contained four incomplete items and two surveys contained five incomplete open-ended items. Overall, less than three percent (21 surveys) of the 837 surveys contained any incomplete open-ended items.

TABLE 2 Number of Incomplete, Closed, and Open-Ended Survey Items

| Number of Items Left Incomplete | Closed Ended Survey Items | | Open Ended Survey Items | |
|---|---|---|---|---|
| | (N) | (%) | (N) | (%) |
| 0 | 772 | 92% | 816 | 97% |
| 1 | 59 | 7% | 13 | 1.6% |
| 2 | 5 | <1% | 2 | <1% |
| 3 | 1 | <1% | 1 | <1% |
| 4 | N/A | N/A | 3 | <1% |
| 5 | N/A | N/A | 2 | <1% |

**Results of Content Analysis**

Results of the content analysis were generated by three independent coders, as previously discussed. Participants listed more than one response in approximately 32% of all cases, indicating that multiple responses to open-ended items are often demonstrated by youth. Data themes resulted in the successful identification of categories on each of the open-ended items on the youth survey. Results of independent coding generated coherent categories by all three coders, generally averaging 5-7 categories per survey item. Using common categories among all three coders, data analysis demonstrated that over 95% of the responses to open-ended items were successfully categorized. The results indicate that content analysis was successful in reducing the data set to meaningful units (Rubin & Babbie, 1997), lending support for peer data collection as capable of producing useful data from adolescent participants.

Results of data analysis supported the peer data collection hypothesis through several mechanisms, including the emergence of themes successfully categorizing data; communication patterns of adolescents with peers and adults; and, the tendency for adolescents to prefer adolescent peers in communication processes. Most important for the purposes of this study, results demonstrate that 45% of youth participants indicated that teens turn to their peers or friends when they need help, with a total 369 responses supporting this category, which represented 34% of all responses on this item. "Peers / Friends" was the dominant category in response to this item across all races and for both males and females. For both males and females, "family" occupied the second most often used response. Our data indicated that approximately equal numbers of teens try to manage problems alone, indicated by the category "self" (15%), or participate in risk behaviors (13%).

The emergence of categories supporting the tendency for youth to relate to peers and the ability of adolescents to recognize problem-related behaviors in peers supports the use of peers in the data collection process. Results of survey item 4 strongly support the likelihood of youth relating to their peers. Although this does not directly address the use of peers in data collection, it does support the tendency of youth to be able to relate to their peers on a variety of issues. The dynamic of adolescents comfortably and readily going to their peers supports, via the content analysis, the idea of using adolescent peers in the data collection process.

Adolescents emerged as potentially effective in the data collection process, particularly in trying to access teens most at risk. This was supported by survey item #5, "You can tell teens really need help when:" where youth participants were effectively able to identify behaviors associated with at-risk teens. Results indicated that 54% (n=440) of youth participants recognized that teens are in need of intervention or assistance when participating in risk behaviors, congruent with the adult-generated research literature on at-risk teens. Youth participants also identified symptoms of depression or depression-related behaviors (35%) as indicative of youth needing help. In total, 97% of responses given by youth on this survey item were successfully categorized into one of the above categories, demonstrating strong support for the belief that adolescents recognize need in their peers.

Adolescents' involvement in recruiting most at-risk participants into the research process was supported. The consistency of the behaviors identified by the youth participants with existing findings on adolescent risk behaviors underscored the ability of youth to serve as effective recruiters for data collection purposes.

Data demonstrating significant barriers for adolescent trust in adults also supports this communication preference by teens of adolescent peers over adults (Survey Item #'s 6 & 7), as well as the definition of participation as an adolescent-perceived risk. Here again, the content does not directly address the issue of preference by adolescents of peers over adults in the data collection role specifically. Rather, it establishes that adolescents view certain behaviors by adults as helpful and / or deserving of trust. These issues are likely to impact the data collection process, as supported by the study's operational definition of adolescent participation in research as a perceived risk. This content is linked to understanding relationships between adults and adolescents, both in general communication, as well as in the researcher role.

Survey item #6, "Adults can help teens by:" establishes ways in which youth participants describe behaviors necessary for adults to be helpful to teens. Of note, the result categories that include an active relationship between teens and adults (Talking and Giving Advice) were the two most prevalent categories, with 44% and 38% of youth listing these behaviors, respectively. These responses imply the need for adults to be forthcoming with information in order to be perceived as helpful to teens. While effective in general communication with adolescents, if applied to the research setting, this content has challenging implications for current data collection procedures. This is frequently in direct conflict with traditional data collection processes, where unknown adults provide little information to youth before requesting their participation in data collection. Generally, teens are instructed on the overall intent of a research study. However, adolescents are not provided with much specific detail or information before data collection occurs, so as not to bias their responses to the data collection process. While this is methodologically sound for research, it appears to negate what teens identify as behaviorally necessary for adults to be perceived as helpful to teens, and presents a possible barrier to the collection of high quality data from adolescents.

These results also imply a type of adolescent testing of adult investment, and a need for some verbal input by adults in order to perceive adults as helpful. This is consistent with the conceptual framework where a perceived lack of safety or trust in adults is implied through partial or compromised youth participation in research. Therefore, content results for survey item #6 do provide support for the peer data collection method by reinforcing issues around a lack of trust in adults. It is beyond the scope of this study to examine the influence of lack of trust in adults, and the degree to which this impacts data collection or diminishes through the use of adolescent peers. However, the youth-generated content regarding lack of trust in adults supports the hypothesis that adolescent participation in research is perceived as a risk by adolescents.

This is further articulated by the results of survey item #7, "Adults can gain teens' trust by:" as youth identified six common categories addressing what adults need to do in order to gain teens' trust. The majority of youth (n=551, 67%) indicated that adults must "be there for teens," in order to gain teens' trust. Included in this category are indicators of adults' relationship with and proximity to teens as necessary precursors to adults gaining teens' trust. Content results indicate that the general processes at work in adult data collection methods may be influenced by the lack of adolescent relationship with, perceived proximity to, or availability of adult researchers active in data collection. Although the survey item does not isolate what adults can do to gain teens' trust within the research setting specifically, the youth-generated content does suggest that general trust by adolescents would be absent without the adolescent-stated prerequisites in the research setting.

These results suggest support for the perception by adolescents that participating in research may be unsafe, as they are asked to disclose, at times, sensitive and personal information to adults. While adolescents were not specifically identified in items #6 and #7 as overcoming these issues, results do lend support for the use of adolescents as a viable alternative to using adults as the sole data collectors with adolescents. Using adolescents as data collectors is supported by combining the above results regarding lack of trust in adults with results already discussed from survey item #4, and suggest that youth prefer communication with peers over communication with adults.

## DISCUSSION

The adolescent peer data collection method employed in the community-based program activity resulted in a total of 837 youth surveys collected by 39 youth for an average of over 21 surveys per adolescent collector. This large data set, produced in a relatively short period of time (1 week), using a small group of adolescent data collectors, demonstrates support for the efficacy of an adolescent peer data collection method. In addition to accessing their peers, teen data collectors were able to facilitate youth participation without use of formal incentives, lending further support to the effectiveness of this method.

Participation was also assessed by evaluating the extent to which the entire survey was completed. Overall, 92% and 97% of surveys contained no incomplete responses to closed- and open-ended survey items, respectively. Moreover, the high rate of completion for both open and closed-ended items across all surveys in this study demonstrates support for the peer data collection method.

As presented in the conceptual framework, adolescent participation in research can be full (willingness to participate in data collection and willingness to complete all items to the best of their ability), or partial (willingness to participate in the process of data collection, but failure to provide adequate or valid responses). The adolescent peer data collection method used in this study resulted in a high rate of youth survey completion on both closed and open-ended questions. This finding relates directly to enhancing adolescent full participation in research, and is also used to assess the peer data collection method's contribution to high quality data.

It is believed that a review of data completion quality supports the proposed method through the overall completion of the surveys collected by youth, through responses which appear related to the items, and through data content analysis resulting in the emergence of core themes / categories which capture the overall responses of youth participants (Creswell, 1998; Rubin & Babbie, 1997). This lends support for the adolescent peer data collection method by addressing both aspects of full participation (agreement and follow-through). Although it is beyond the scope of this study to assess the validity of their individual responses to measure data quality, this evidence of full participation remains supportive in that responses were complete and analyzable.

Additional measures of data completion quality, specifically on open-ended survey items, supported the peer data collection method. This is based on the high rate of responses, which appear related to the survey items, and through data content analysis that resulted in the emergence of core themes that captured the overall responses of youth participants (Creswell, 1998; Rubin & Babbie, 1997). Using the common categories, data analysis demonstrated that over 95% of the responses to open-ended items could be successfully categorized. This supports the adolescent peer data collection method by indicating a degree of data quality that resulted in common themes and the ability to code the majority of all open-ended responses according to the resulting categories (Creswell, 1998; Rubin & Babbie, 1997). Additionally, the results of codes that are directly linked to the survey items in content support the peer data collection method through the demonstration and documentation of full adolescent participation through data completion, with data completion being of high quality.

Our data supported the viability of the adolescent peer data collection method, inasmuch as categories related to adolescent communication items on the survey indicated a preference for peer influence over adult influence. This preference refers to adolescent communication in general, not directly to the preference of adolescents over adults in the data collection role. However, the content establishes, via the analysis, that adolescent-to-adolescent communication is a natural pattern for the cohort, and may extend into the data collection arena as well. The content analysis results indicate that youth readily identify peers / friends as a source of comfort, support or guidance when in need. The prevalence of youth identifying peers as a contact suggests potential support for the adolescent peer data collection, as presumably adolescents view their peers as a natural place for information sharing and attainment.

Content analysis also supports the conceptualization of adolescent participation in research as a perceived risk by adolescents. This is most apparent in ongoing barriers to adolescent trust in adults and behaviors identified as being necessary to gain teens' trust. Dissonance between these behaviors and traditional data collection methods used with adolescents points to the utility of exploring alternative methods to minimize risk perception, such as the approach we used.

The current study is the only one we know about that examines the use of an adolescent peer data collection method. Its limitations are inherent in its exploratory design, as it combines a survey response analysis with content analysis in a new area of inquiry. The use of secondary data analysis also represents a limitation, as the data were not collected for the express purpose of inclusion in this study. The study also suffers from lack of a comparison group, consistent with its exploratory design. All data collected were self-reported, potentially biased by a number of reporting errors. Additionally, the data generated from the community-based activity, and the group files on which the current study was based, suffer from a number of threats to both internal and external validity. The limitations require that our conclusions be accepted with judicious caution. Although strong support of the method is demonstrated through the data and supported fully by discussion, much additional research is necessary before acceptance of the adolescent peer-involved data collection method is suggested. This study serves as an invitation for additional research on the ideas presented here.

## REFERENCES

Aloise-Young, P.A., Graham, J.W., & Hansen, W.B. (1994). Peer influence on smoking initiation during early adolescence: a comparison of group members and group outsiders. *Journal of Applied Psychology, April, 79 (2),* 281-287.

Bjarnason, T., & Adalbjarnardottir, S. (2000). Anonymity and confidentiality in school surveys on alcohol, tobacco, and cannabis use. *Journal of Drug Issues, 30(2),* 335-343.

Black, D.R., Tobler, N.S., & Sciacca, J.P. (1998). Peer helping / involvement: an efficacious way to meet the challenge of reducing alcohol, tobacco, and other drug use among youth? *Journal of School Health, March, 68 (3),* 87-93.

Boehm, K.E., Schondel, C.K., Ivoska, W.J., Marlowe, A.L., & Manke-Mitchell, L. (1998). Calls to teen line: Representative concerns of adolescents. *Adolescence*, Winter, *33 (132)*, 797-803.

Boehm, K.E., Schondel, C.K., Marlowe, A.L., & Manke-Mitchell, L. (1999). Teens' concerns: a national evaluation. *Adolescence, Fall, 34 (135),* 523-528.

Brown, B. B., Eicher, S. A., & Petrie, S. (1986). The importance of peer group ("crowd") affiliation in adolescence. *Journal of Adolescence, 9(1),* 73-96.

Brown, B. B., & Lohr, M. J. (1987). Peer-group affiliation and adolescent self-esteem: An integration ego-identity and symbolic-interaction theories. *Journal of Personal Social Psychology, 52(1),* 47-55.

Brun, C. & Rapp, R. (2001). Strengths-based case management: Individual's perspectives on strengths and the case manager relationship. *Social* Work, 46(3), 278-288.

Centers of Disease Control (2000). Youth Risk Behavior Surveillance – United States, 1999. *MMWR, June 9, 2000 / 49(SS05);* 1-96.

Connor, A., Ling, C. G., Tuttle, J., & Brown-Tezera, B. (1999). Peer education project with persons who have experienced homelessness. *Public Health Nursing, 16(5),* 367-373.

Cowdery, J.E., Fitzhugh, E.C., & Wang, M.Q. (1997). Sociobehavioral influences on smoking initiation of Hispanic adolescents. *Journal of Adolescent Health, January, 20 (1),* 46-50.

Gmel, G. (2000). The effect of mode of data collection and of non-response on reported alcohol consumption: A split-sample study in Switzerland. *Addiction, 95(1),* 123-134.

Grinnel, R. M., Jr. (2001). *Social Work Research and Evaluation: Quantitative and Qualitative Approaches.* (6th edition). F.E. Peacock Publishers.

Grube, J. W. (1997). Monitoring youth behavior in response to structural changes—Alternative approaches for measuring adolescent drinking. *Evaluation Review, 21(2),* 231-245.

Jacobson, L., Wilkinson, C., & Owen, P. (1993). Teen pregnancy—Seek the views of teenagers. *British Medical Journal, 306(6894),* 1750-1750.

La Greca, A. M., & Lopez, N. (1998). Social anxiety among adolescents: Linking with peer relations and friendships. *Journal of Abnormal Child Psychology, 26(2),* 83-94.

Mann, L., Harmoni, R., & Power, C. (1989). Adolescent decision-making: The development of competence. *Journal of Adolescence, 12(3),* 265-278.

Michaud, P. A., Narring, F., & Ferron, C. (1999). Alternative methods in the investigation of adolescents' sexual life. *Journal of Adolescent Health, 25(1),* 84-90.

Milburn, K. (1995). A critical review of peer education with young people with special reference to sexual health. *Health Education Research, 10(4),* 407-420.

O'Brien, S. F., & Bierman, K. L. (1988). Conceptions and perceived influence of peer groups: Interviews with preadolescents and adolescents. *Child Development, 59(5),* 1360-1365.

Oppong-Odiseng, A. C. K., & Heycock, E. G. (1997). Adolescent health services—Through their eyes. *Archives of Disease in Childhood, 77(2),* 115-119.

Oyserman, D. (1993). Adolescent identity and delinquency in interpersonal context. *Child Psychiatry and Human Development, 23(3),* 203-214.

Pombeni, M. L., Kirchler, E., & Palmonari, A. (1990). Identification with peers as a strategy to muddle through troubles of adolescent years. *Journal of Adolescence, 13(4),* 351-369.

Posavac, E. J., Kattapong, K. R., & Dew, D. E. (1999). Peer-based interventions to influence health-related behaviors and attitudes: A meta-analysis. *Psychological Reports, 85(3,* Pt. 2), 1179-1194.

Prince, F. (1995). The relative effectiveness of a peer-lead and adult-led smoking intervention program. *Adolescence, 30(117),* 187-194.

Rubin, A. & Babbie, E. (1997). *Research Methods for Social Work* (4th ed.). Pacific Grove, CA.: Brooks/Cole Publishing Co.

Schneider, B. (1999). A multimethod exploration of the friendships of children considered socially withdrawn by their school peers. *Journal of Abnormal Child Psychology, 7(2),* 115-123.

Scholte, R. H., van Aken, M. A., & van Lieshout, C. F. (1997). Adolescent personality factors in self-ratings and peer nomination and their prediction of peer acceptance and peer rejection. *Journal of Personal Assessment, 69(3),* 534-554.

Sonenstein, F. L. (1997). Using self-reports to measure program impact. *Children and Youth Services Review, 19(7),* 567-585.

Supple, A. J., Aquilino, W. S., & Wright, D. L. (1999). Collecting sensitive self-report data with laptop computers: Impact on the response tendencies of adolescents in a home interview. *Journal of Research on Adolescence, 9*(4), 467-488.

Turner, G., & Shepherd, J. (1999). A method in search of a theory: Peer education and health promotion. *Health Education Research, 14*(2), 235-247.

Ungar, M. T. (2000). The myth of peer pressure. *Adolescence, 35*(137), 167-180.

Wiist, W.H., Jackson, R.H., & Jackson, K.W. (1996). Peer and community leader education to prevent youth violence. *American Journal of Preventative Medicine, 12* (5 Supplement), 56-64.

# Vulgar Language: Review of Sex Differences in Usage, Attributions, and Pathologies

Harvey J. Ginsburg, Shirley M. Ogletree & Tammy D. Silakowski
*Southwest Texas State University*

Males produce quantitatively and qualitatively coarser language than females. Sex differences have been reported across cultures and over time. Use of vulgar language has been placed in theoretical contexts, although none have adequately explained the phenomenon or findings of sex differences in vulgar language. A review of sparse empirical research shows that while the sexes may differ in use of obscene language, stereotyped portrayals are unwarranted. When cursing is viewed on a continuum, females and males show considerable overlap and variation. One exception emerges, telephone scatologia, a largely male phenomenon. The relation between normative data and male obscene telephone calls is discussed.

Males purportedly use significantly more frequent and more forceful vulgar language than females. While attempts have been made to explain why people curse and the concomitant sex differences, our literature review showed that scant empirical research limits our current ability to provide any robust explanation of the phenomenon. Further, the extant literature is fraught with contradictory findings about the prevalence of sex differences in cursing. This review provides a brief systematic overview of general theories and empirical research about sex differences in the frequency and forcefulness of vulgar language usage, attributions and perceptions of purported sex differences, and an examination of sex differences in vulgar language pathologies, copralalia and telephone scatologia.

## THEORETICAL PERSPECTIVES

Patrick (1901) provided the first psychological review of profanity. He placed profanity in the context of the James-Lange and the Sutherland motor theories about emotional expressions, especially anger. Patrick suggested that profanity was a means of expressive behavior derived from male combat originally used to shock and awe opponents. He also suggested that profanity provided catharsis during times of personal conflict and coping.

---

*Author info*: Correspondence should be sent to: Dr. Harvey Ginsburg, Psych. Dept., Southwest Texas State University, 601 University Dr., San Marcos, TX 78666-4616. Hg01@swt.edu

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 105-116.

© NAJP

Graber (1931) provided a psychoanalytic perspective that cursing represents destructive aggressive and sexual urges. He conjectured that cursing has cathartic value. Arango (1989) added that taboo words have psychodynamic origins and function in every human culture as a source of emotional stimulation. Similarly, Hollander (1960) viewed cursing as displaced aggression and compulsive cursing as an involuntary energy discharge. Although explanations based upon displaced aggression and catharsis may be appealing, our literature search of PsychInfo© and Sociological Abstracts (Sociofile)© showed that the relation between cursing and catharsis has never been empirically documented.

Lancker and Cummings (1999) recently proposed neurolinguistic and neurobehavioral perspectives on swearing. They noted that increased use of expletives is a linguistic feature of severe aphasia, adult left hemispherectomy and Gilles de la Tourette syndrome (GTS). The authors compared swearing in normal human communication with clinical populations.

Jay (2000) reviewed the extant literature and concluded that there is currently no coherent theory that explains cursing. He proposed an integrative model that considers psychological, neurological, cultural and linguistic factors. It is evident from this literature review that a multi-determinants approach is required.

Regarding the apparent sex differences in vulgar language usage, Lakoff (1973) proposed a socialization model. Women are taught and reinforced to use words that are more polite instead of words that are impolite as well as forceful. However, any proposed explanatory model is severely limited by the paucity of objective research on cursing and concomitant sex differences in cursing. Since Patrick's review and speculations over a century ago, there is a dearth of empirical evidence reported in the scientific literature. Although sex differences are commonly presumed to exist, there is conflicting evidence for similarities and differences between males and females.

## SEX DIFFERENCES IN VULGAR LANGUAGE USAGE

Jespersen (1927) and Steadman (1935) reported that women preferred using less coarse language than men. Gregersen (1979), an anthropological linguist, interviewed informants from more than 100 languages about swearing. More frequent and forceful profane language was attributed as an aspect of male style. He also noted that reference to the opponent's mother was considered the worst derogatory remark by about two-thirds of his sample. Menzie (1991) performed an anthropological field study of professional male halibut fishermen in British Columbia. The author proposed that coarse language reinforces a culture of gender inequality, since many references to women are derogatory or lewd.

thereby strengthening male solidarity by proclaiming halibut fishing as an exclusively male enterprise. Kocoglu (1996) compared survey results from a small sample of twenty Turkish university student participants. The author reported that males used stronger expletives and that no cultural distinctions existed between United States and Turkish sex differences in the use of expletives.

Based upon a small sample of forty college students, Foote and Woodward (1973) found that males produced quantitatively more written and oral obscenities than females. Mabry (1974) and Grossman and Tucker (1997) also observed similar sex differences in vulgar language knowledge and usage. Braun and Kitzinger (2001) found that compared to women, men produced significantly more slang terms for genitalia.

Bailey and Timm (1976) have provided the only study of the relation between age and vulgar language usage. They reported that the frequency and strength of cursing peaks sooner in males, between twenty-eight and thirty-one years, than in females, between thirty-one to thirty-four years. They also noted that females over forty-three years reported rarely using expletives. The small sample size of twenty-nine participants limits the generality of these age-related findings.

According to Lakoff (1973), women are socialized to use words that are more polite and less forceful. However, Alexander's (1978) study of sex differences in public restroom graffiti suggests that such explanations may fail to capture the complexity of sex differences in vulgar language usage. Supporting traditional interpretations, romantic graffiti were more common in female restrooms. Males produced more graffiti, more obscene graffiti, and had fewer restrooms without graffiti. Erotic drawings were observed exclusively in male restrooms, and male sexual graffiti were prone to sexual and self-aggrandizement. Contradicting traditional interpretations, female restrooms had more vulgar graffiti than romantic graffiti, and the proportion of vulgar graffiti in women's restrooms was similar to the proportion in male restrooms. Alexander concluded that while females have retained some traditionally feminine traits, they have also acquired and manifested some traditionally masculine ones. Loewenstine, Ponticos & Paludi (1982) also found significant sex differences in the vulgar content and language of male and female graffiti.

An examination of the literature on sex differences in vulgar language production has produced some controversy. In her review of female and male spoken language differences, Haas (1979) concluded that little evidence exists to distinguish between females' and males' use of vulgar words. Jay (1980) disputed Haas by citing several empirical studies comparing the sexes. Jay (1980) responded to Haas' conclusion that there was no scientific literature supporting sex differences in expletives and slang usage. Jay also noted that reviews of perceptual defense studies on reaction times for taboo and non-taboo words showed generally consistent findings of sex differences (Dixon, 1971; Erdelyi, 1974). Females generally responded more slowly to taboo words than males.

The controversy continued when de Klerk (1991) reported that the literature showed authors' decidedly male bias regarding swearing, despite lack of reliable, empirical evidence showing sex differences. Although de Klerk observed significant sex differences in teens' reported use of expletives, she noted that stereotypes of demure, non-swearing females were not observed. Rather than relying upon self-report surveys of vulgar language use, Bayard and Krishnayya (2001) performed analyses of actual conversations of university students. They reported non-significant sex differences in conversational swearing and concluded that the use of expletives is no longer a male-dominant trait.

## SEX DIFFERENCES IN ATTRIBUTIONS AND PERCEPTIONS OF VULGAR LANGUAGE

In addition to studies of sex differences in expletive usage, a few investigators have also examined attributions and perceptions about people who emit profanities. Mitchell (1943) found that from 1937 to 1942 profanity was perceived as less of a vice, suggesting that the degree of cursing that is tolerated is relative and subject to change within cultures. There is some evidence showing that despite relative fluctuations in how cursing is perceived, persistent sex differences in use and attributions persist.

In the earliest attribution study, Edelsky (1976) had first, third, and sixth grade children, as well as adults, read quotations. The task was to identify the sex of the speaker based upon language use. Profanities were reliably attributed to male speakers, while euphemisms (e.g., my goodness, oh, dear) were typically attributed to females. Selnow (1985) reported that men used more profanity than women, and, compared to males, females perceived profanity in public settings as less appropriate for women than for men. Rieber, Wiedemann and D'Amato (1979) reported that females reacted more strongly to obscene language than males. Cohen and Saine (1977) observed that use of profanity led to negative impression formation of male or female hypothetical speakers, although no sex differences were reported. Similarly, Phillips and Kassinove (1987) reported that when psychologists used a lecture with profanities, they were rated as less trustworthy and their recommendation to purchase a book was followed less frequently. No sex differences in these perceptions were noted. Staley (1978) observed no sex differences in the number of strong expletives reportedly used by men and women. However, males underestimated females' reported use. Conversely, women's perceptions showed an overestimation of men's use of vulgar language.

Martin (1997) had undergraduates read written transcripts of same-sex and opposite-sex friendship conversations from which all gender identifiers had been removed. Respondents correctly distinguished female and male conversations by the topics that were discussed. Profanity and slang terms also differentiated conversations attributed to females and males.

Sewell (1984) investigated sex differences in appreciation of cartoons with three levels of profanity in the captions. When the cartoon caption included either mild or strong profanity, men rated the cartoons as funnier than did women. Fine and Johnson (1984) examined female and male motives for using obscenities. Both females and males reported that salient motives for using obscenities were related to expressions of anger and to emphasize feelings. Rasmussen and Moely (1986) investigated differences between perceptions of women's and men's language usage. Effects were strongest for the categories of expletives and adjectives.

## SEX DIFFERENCES IN PATHOLOGIES: COPROLALIA AND TELEPHONE SCATOLOGIA

We conclude our discussion of sex differences in vulgar language by considering extreme manifestations: coprolalia, excessive and uncontrollable swearing that is observed in a minority of Gilles de la Tourette syndrome (GTS) patients, and telephone scatologia, also known as obscene telephone calling (OTC). Singer (1997) reported the prevalence of coprolalia varied from 8% in primary pediatric practices to over 60% in tertiary referral centers. To date, no sex differences in coprolalia have been reported in the scientific literature.

Singer also noted that coprolalia has been a recognized symptom of GTS from the first description of the syndrome. A sex difference in GTS prevalence has been estimated. Burd, Kerbersian, & Fisher (1986) asked medical practitioners in North Dakota to estimate the prevalence of GTS in their school-aged patients. The authors reported that practitioners estimated the prevalence in the general population as only slightly higher (5.2 cases per 10,000) than the current national estimates. Surprisingly, the practitioners estimated a 9:1 male to female sex ratio for GTS.

Although sex differences for GTS prevalence may exist, coprolalia sex differences among GTS patients have not been examined. Robertson and Baron-Cohen (2000) noted that involuntary obscene swearing and gestures were secondary symptoms reported for a small percentage of patients with GTS.

When the phenomenon is present, reported observations have been striking. For example, Dalsgaard, Damm, & Thomsen. (2001) provided a

GTS case history of a ten year-old boy with congenital deafness. The boy began using sign language at age four. By age seven, the disorder rapidly accelerated, and the equivalent of vocal tics became incorporated into his sign language. Dalsgaard et. al. observed the congenitally deaf male signing obscenities to non-signing adults unfamiliar with sign language and unable to comprehend obscene content. They suggested that the finding was evidence that such cursing with sign language has primarily endogenous origins and was not dependent upon feedback from persons responding to the outbursts. Females with GTS and exhibiting coprolalia have also been reported as case studies in the literature (Friedman, 1980; Pary, 1979; Salmi, 1961). Sex differences in coprolalia remain understudied as a whole and among GTS patients in particular.

Another relevant pathology is telephone scatologia, commonly known as obscene telephone calls (OTC). OTC is not classified as a major paraphilia and is considered a residual co-morbid manifestation of other, male-dominated paraphilias. Despite its lack of prominence as a psychiatric disorder, OTC has been reported as the most common offense perpetrated against women (Herold, Mantle & Zemitis, 1979). They found that 84% of women in their college sample reported being the victim of a sexual offense and that obscene telephone calls (61%) were the most frequent offense. Most incidents were unreported to parents or authorities. Katz (1994) surveyed 354 women and found that 16% had received at least one obscene telephone call within the six months preceding the survey. Smith and Morra (1994) examined data from a 1992 Canadian survey on sexual harassment, including obscene and other types of threatening phone calls, of 1,990 women who worked outside their homes. A majority (83.2%) reported receiving obscene or threatening telephone calls. The typical caller was an anonymous male. Relatively few calls were reported to the police or the phone company, and those who did often reported a lack of response. Most reported fear and indicated that the calls affected them emotionally. The authors concluded that obscene and threatening phone calls have harmful effects on women and may be the most common form of violence against women.

Morgan and King (1977) collected data on calls to a telephone counseling center over a period of 22 months. Results showed that males made significantly more prank and obscene calls than females. Leising (1985) noted the negative effects of obscene telephone callers upon crisis intervention services and suggested that a formalized response concluding with threat of legal sanctions is most appropriate.

Matek (1988) proposed that crisis center callers represent a separate category of residual paraphilia, noting that the *Diagnostic and Statistical Manual of Mental Disorders* made no specific mention of obscene telephone calls other than as a residual category of paraphilia. Matek observed that the phenomenon of obscene phone calling is surprisingly common, especially among males.

Stones (1992) examined the interviews of 114 male perpetrators and 567 mostly female victims of obscene telephone calls who called a help-line following a televised program about OTC. All of the perpetrators who called were men, while victims who called were mostly women. Price, Kafka, Commons, Gutheil and Simpson (2002) compared telephone scatologia co-morbidity with other paraphilias and paraphilia-related disorders. Data were collected prospectively from 206 outpatient males. The all-male obscene telephone caller sample had greater numbers of multiple lifetime deviant and non-deviant sexual impulsivity disorders when compared to other paraphiliacs.

## CONCLUSIONS

Although findings about sex differences in vulgar language are sometimes conflicted, several fundamental conclusions may be drawn. Males generally do appear to use vulgar language more than females. Numerous studies reviewed showed this sex difference. Considerably fewer authors reported non-statistically significant sex differences with trends showing males producing more vulgarities than females. Not one investigator reported results from a sample where women used more vulgar language than men. However, over-generalized attributions and stereotypes may develop when our everyday predictions are supported more often than not. Haas (1979) warned of overstating any observed differences in females' and males' expletives production at the expense of overlooking the major similarities. Her cautionary conclusions about sex differences in cursing are noteworthy, since the overlap and high variability of the distributions for females and males may be as important as the differences. The findings reviewed suggest a cursing continuum for men and women rather than a stereotyped male-female dichotomy. However, since males do produce somewhat more vulgar language than females, it is not surprising that participants across investigations always predicted, attributed, and perceived males as producing more vulgar language than females. Future research may determine whether high levels of male cursing are related to masculinity on masculinity-femininity scales or scales measuring attitudes toward women.

Further, the male stereotype for anonymous telephone scatology does not appear to be just a stereotype (Sheffield, 1989). An almost exclusively male offense perpetrated primarily against women, it would be of interest to determine how it may be related to normative data on cursing. Future prospective research with a large sample could determine whether extreme scores are indeed predominated by males and whether extreme scores within a normal population are reliable predictors of an at-risk population.

Regarding sex differences in perceptions of telephone scatologia, it would be of interest to provide male and female research participants with written scripts or audio recordings of hypothetical obscene telephone calls that have identical content. When the caller's sex is varied, to what extent would male and female participants, imagining being recipients of the calls, find the experience erotic, frightening, degrading, or disgusting? Perhaps men may perceive telephone scatologia as more erotic than degrading, when women make obscene phone calls. Indeed, some men specifically solicit women for such purposes, as evidenced by male-oriented Internet and other media advertisements.

From a Darwinian perspective, vulgar language production is a human species-specific display serving a communication function to other humans. When a hammer hits one's thumb, some people may curse themselves or the hammer. This may appear to be endogenous when it occurs in the absence of other people. However, anyone at a distance who hears the howling curse is immediately aware of the person's mood produced by the sudden, self-inflicted pain. Depending upon the particular social context, cursing may serve as a signal of aggression threat, dominance display, or group cohesion mechanism.

Why men and women differ in profanity use is open to speculation. As summarized previously, Lakoff (1973) ascribes sex differences in cursing to socialization. However, biological or genetic influences may also have a role in explaining observed sex differences. The cultural universality of greater male vulgar language usage and the striking phenomenon of male predominance at the extreme end of this usage, as in telephone scatologia, suggest some biological predisposition.

While some of these traits and behaviors may occur to a greater degree in males than females, females may also demonstrate these characteristics. The sexes of most species possess more shared traits than non-shared ones. Profanity use is no exception.

Is male profanity an expression of aggression? Is the primary goal of most female vulgar language use to gain social acceptance? While the underlying motives for cursing are multi-faceted and apply to both sexes, cultures and subcultures determine the display rules and boundaries for vulgar language usage by men and women.

## REFERENCES

Alexander, B. (1978). Male and female rest room graffiti. *Maledicta, 2*, 42-59.

Arango, A. C. (1989). *Dirty words: Psychoanalytic insights*. Northvale, NJ, US: Jay Aronson, Inc.

Bailey, L. A., & Timm, L. A. (1976). More on women's- and men's- expletives. *Anthropological Linguistics, 18*, 438-449.

Bayard, D., & Krishnayya, S. (2001). Gender, expletive use, and context: Male and female expletive use in structured and unstructured conversation among New Zealand university students. *Women & Language , 24*, 1-15.

Braun, V., & Kitzinger, C. (2001). "Snatch," "hole," or "honey-pot?" Semantic categories and the problem on nonspecificity in female genital slang. *Journal of Sex Research, 38*, 146-158.

Burd, L., Kerbeshian, J., Wikenheiser, M., & Fisher, W. (1986). A prevalence study of Gilles de la Tourette syndrome in North Dakota school-age children. *Journal of the American Academy of Child Psychiatry, 25*, 552-553.

Cohen, M. M; & Saine, T. J. (1977). The role of profanity and sex variables in interpersonal impression formation: *Journal of Applied Communication Research, 5*, 45-51.

Dalsgaard, S., Damm, D., & Thomsen, P. H. (2001). Gilles de la Tourette Syndrome in a child with congenital deafness. *European Child & Adolescent Psychiatry, 10*, 256-259.

de Klerk, V. (1991). Expletives: Men only? *Communication Monographs, 58*, 156-169.

Dixon, N.F. (1971). *Subliminal perception: The nature of a controversy*. New York: McGraw-Hill.

Edelsky, C. (1976). The acquisition of communicative competence: Recognition of linguistic correlates of sex roles. *Merrill-Palmer Quarterly, 22*, 47-59.

Erdelyi, M.H. (1974). A new look at the new look: Perceptual defense and vigilance. *Psychological Review, 81*, 1-25.

Fine, M. G., & Johnson, F. L. (1984). Female and male motives for using obscenity. *Journal of Language & Social Psychology, 3*. 59-74.

Foote, R., & Woodward, J. (1973). A preliminary investigation of obscene language. *Journal of Psychology. 83*, 263-275.

Friedman, S. (1980). Self-control in the treatment of Gilles de la Tourette's syndrome. Case study with 18-month follow-up. *Journal of Consulting & Clinical Psychology, 48*, 400-402.

Graber, G. H. (1931). The psychoanalysis of cursing/Zur Psychoanalyse des Fluchens *Psychoanalytische Bewegun, 3*, 57-68.

Gregersen, E.A. (1979). Sexual linguistics. *Annals of the New York Academy of Sciences. 327*, 3-19.

Grossman, A., & Tucker, J. (1997). Gender differences and sexism in the knowledge and use of slang. *Sex Roles, 37*, 101-110.

Haas, A. (1979). Male and female spoken language differences: Stereotypes and evidence. *Psychological Bulletin, 86*, 616-626.

Herold, E. S., Mantle, D., & Zemitis, O. (1979). A study of sexual offenses against females. *Adolescence, 14*, 65-72.

Hollander, R. (1960). Compulsive cursing. *Psychiatric Quarterly. 34*, 599-622.

Jay, T. (1980). Sex roles and dirty word usage: A review of the literature and a reply to Haas. *Psychological Bulletin, 88*, 614-621.

Jay, T. (2000). *Why we curse: A neuro-psycho-social theory of speech.* Amsterdam, Netherlands: John Benjamins Publishing Company.

Jespersen, O. (1927). L'individu et la communaute linguistique. *Journal of Psychologie, 24*, 573-590.

Katz, J.E. (1994). Empirical and theoretical dimensions of obscene phone calls to women in the United States. *Human Communication Research, 21*, 55-182.

Kocoglu, Z. (1996). Gender differences in the use of expletives: A Turkish case. *Women & Language,19*, 30-35.

Lakoff, R. (1973). Language and woman's place. *Language in Society, 2*, 45-49.

Lancker, D. V., & Cummings, J. L. (1999). Expletives: Neurolinguistic and neurobehavioral perspectives on swearing *Brain Research Reviews, 31*, 83-104.

Leising, P. (1985). The negative effects of the obscene telephone caller upon crisis intervention services. *Crisis Intervention, 14*, 84-92.

Loewenstine, H. V., Ponticos, G. D., & Paludi, M. A. (1982). Sex differences in graffiti as a communication style. *Journal of Social Psychology,117*, 307-308.

Martin, R. (1997). "Girls don't talk about garages!": Perceptions of conversation in same- and cross-sex friendships *Personal Relationships, 4*, 115-130.

Mabry, E. A. (1974). Dimensions of profanity. *Psychological Reports,35*, 387-391.

Matek, O. (1988). Obscene phone callers. *Journal of Social Work & Human Sexuality. Special Issue: The sexually unusual: Guide to understanding and helping, 7*,113-130.

Menzie, C. R. (1991) Obscenities and fishermen: The (re)production of gender in the process of production. *Anthropology of Work Review, 12*, 13-16.

Mitchell, C. (1943). Do virtues and vices change? *School & Society. 57*, 111-112.

Morgan, J. P., & King, G. D. (1977). Calls to a telephone counseling center. *Journal of Community Psychology, 5*, 112-115.

Pary, R. J. (1979). The psychotic curse. *American Journal of Psychiatry, 136*, 715-716.

Patrick, G. T. W. (1901). The psychology of profanity. *Psychological Review, 8*, 13-127.

Phillips, M., & Kassinove, H. (1987). Effects of profanity, touch, and sex of the counselor on perceptions of the counselor and behavioral compliance: Implications for rational-emotive therapists. *Journal of Rational-Emotive Therapy. 5*, 3-12.

Price, M., Kafka, M., Commons, M. L., Gutheil, T.G., & Simpson, W. (2002). Telephone scatologia: Comorbidity with other paraphilias and paraphilia-related disorders. *International Journal of Law & Psychiatry, 25*, 37-49.

Rasmussen, J. L., & Moely, B. E. (1986). Impression formation as a function of the sex role appropriateness of linguistic behavior. *Sex Roles, 14*, 149-161.

Rieber, R. W., Wiedemann, C. F., & D'Amato, J. (1979). Obscenity: Its frequency and context of usage as compared in males, nonfeminist females, and feminist females. *Journal of Psycholinguistic Research, 8*, 201-223.

Robertson, M. M., & Baron-Cohen, S. (2000). *Tourette Syndrome: The facts* (2nd ed.). London: Oxford University Press.

Salmi, K. (1961). Gilles de la Tourette's disease: The report of a case and its treatment *Acta Psychiatrica et Neurologica, 36*, 157-162.

Selnow, G.W. (1985). Sex differences in uses and perceptions of profanity. *SexRoles.12*, 303-312.

Sheffield, C. J. (1989). The invisible intruder: Women's experiences of obscene phone calls. *Gender & Society, 3*, 483-488.

Sewell, E. H. (1984). Appreciation of cartoons with profanity in captions. *Psychological Reports, 54*, 583-587.

Singer, C. (1997). Coprolalia and other coprophenomena. *Neurologic Clinics, 15*, 299-308.

Smith, M. D., & Morra, N. N. (1994). Obscene and threatening telephone calls to women: Data from a Canadian National Survey. *Gender & Society, 8*, 584-596.

Staley, C.M. (1978). Male-female use of expletives: A heck of a difference in expectations. *Anthropological Linguistics,20*, 367-380.

Steadman, J.M. (1935). A study of verbal taboos. *American Speech, 10*, 93-103.

Stones, C. R. (1992). Who's speaking? A tentative profile of the obscene telephone caller. *Journal of Social Behavior & Personality,7*, 639-648.

# Celebrity Worship and Psychological Type

Nancy G. McCarley and Carlos A. Escoto
*Mississippi State University*

The Celebrity Attitude Scale (CAS) measures 3 levels of celebrity worship. Previous research has also shown a relationship between psychological type (as measured by the Myers-Briggs Type Indicator) and membership in celebrity fan clubs. The present study investigated the relationship between psychological type and the CAS. No statistically significant relationships between any of the 3 factors of the CAS and the 4 subscales of the MBTI were found.

Morton (1997) recently concluded that Americans have become more interested in the personal lives of celebrities. Some research has found that idolization of pop singers decreases with age and appears to be gender specific (Raviv, Bar-Tal. Raviv. & Ben-Horin, 1996). However, it should be noted that there is a difference between non-pathological (fan clubs) and pathological (stalking) behaviors associated with being a "fan" (Ferris, 2001; McCutcheon, Lange. Houran, 2002). Elucidation of the underlying differences between pathological and non-pathological "fan" behavior is a relatively new line of research.

Leets & de Becker (1995) cite social cognitive research that points to hypothetical internal dialogues or intrapersonal communication as leading to the formation of expectations about events and people. These authors suggest that inappropriate behavior can be partly explained by the expectation of the fans. Using a college student sample, the authors examined the association between the motivation to contact celebrities and actual fan letters analyzed for content. The authors concluded that expectation was the distinguishing marker between appropriate and inappropriate letters and physical encounters. Dietz, et al. (1991) have reported similar findings.

The distinction between pathological and non-pathological celebrity worship is a point of research. The *Celebrity Attitude Scale* (CAS) was developed to assess the various dimensions of celebrity worship. Maltby, McCutcheon. Ashe and Houran (2001) found that the CAS was related to poor psychological well-being.

Shyness and loneliness have also been examined in relation to the CAS. Ashe and McCutcheon (2001) did not find that either of the two predicted celebrity worship. However, the CAS was found to be

---

*Author info*: Correspondence should be sent to: Nancy G. McCarley, Ph.D., 110 Magruder Hall, P.O. Box 6161. Mississippi State. MS 39762.

*North American Journal of Psychology*. 2003. Vol 5. No. 1. 117-120.
© NAJP

associated with differences of personality as measured by the *Revised Eysenck Personality Questionnaire*. Specifically, celebrity worship for entertainment/social reasons predicted extraversion, celebrity worship for intense-personal reasons was linked to neuroticism, and celebrity worship for mildly pathological reasons was linked to psychoticism (Maltby, Houran, & McCutcheon, 2002, in press).

Previous research has found that the *Myers-Briggs Type Indicator* (MBTI), a measure of psychological type, differentiated between fans of Michael Jackson, with male fans over-represented by INFPs and ENFPs, and underrepresented by ESTJs. Female fans showed heavy over-representations of INFJ, INFP and ENFP and under-representations of ESFJ and ESTJ (Stever, 1991a). The present study used Form M of the MBTI (Myers, McCaulley, Quenk, & Hammer, 1998) to extend the findings of Maltby et al. (2002, in press) and Stever (1991a, 1991b).

## METHOD

### Participants and Procedure

The participants were 172 undergraduate students (126 women, 45 men; *M* age = 18.8 years, *SD* = 2.50). No other demographic information was collected. Students participated in the experiment to receive credit as part of an introductory psychology course. They filled out both measures in classrooms at their university. In order to counterbalance for carryover effects, the order in which the forms were presented was randomized.

### Measures

The *Celebrity Attitude Scale* (CAS) was developed to identify personality traits that could be associated with stronger attraction toward celebrities (McCutcheon, et al., 2002). Respondents are requested to fill out the scale using their favorite celebrity as a target. Very high scores indicate a tendency to be a celebrity worshipper. The revised CAS is a 23-item questionnaire which has been shown to have adequate validity and reliability (Maltby, McCutcheon, Ashe, & Houran, 2001; McCutcheon & Maltby, 2002). Factor analyses have confirmed a 3-factor structure of the CAS which includes Factor 1: Entertainment/Social; Factor 2: Intense/Personal; and Factor 3: Mild pathological (Maltby, et al., 2002).

The MBTI (Form M; Myers, et al., 1998) consists of 93 items. Most items force respondents to endorse one of two alternatives, although some items have more than two alternatives, and it is occasionally permissible to choose more than one alternative. The items were rationally derived and form four bipolar dimensions: Extraversion-Introversion (EI), Sensing-Intuition (SN), Thinking-Feeling (TF), and Judging-Perceiving (JP). The MBTI can yield several types of scores.

Preference scores are computed for each of the eight poles, and the difference between preference scores on a given dimension (e.g., E and I) indicates the individual's overall inclination on the dimension (e.g., E or I). After determining the individual's preference for each of the four dimensions, it is possible to identify the individual's place in the 16-cell taxonomy (e.g., ENTJ, INFP, etc.). Continuous scores are also available for each of the four dimensions. A continuous score of 100 represents neutrality; scores below 100 denote inclinations toward E, S, T, or J, while scores above 100 show the preference is toward the opposite pole (e.g., I, N, F, P). The magnitude of the given continuous score reflects the relative strength of a person's preference on that particular dimension. Because of the variability lost by dichotomous categories (e.g., simply using E or I), and because of the ipsative nature of the preference scores, our data analyses considered only the continuous scores of the four MBTI scales.

## RESULTS

Pearson correlation coefficients were computed between CAS and the MBTI continuous scores. Table 1 presents observed correlations between the scores of the MBTI and the three Factors of the CAS. Continuous scores of the four MBTI scales were not significantly related to any of the three factors of the CAS.

TABLE 1 Correlations for MBTI and CAS Subscales

| MBTI | Factor1 | Factor 2 | Factor 3 |
|---|---|---|---|
| EI | .134 ($p$ = .067) | .113 ($p$ = .123) | .097 ($p$ = .184) |
| SN | .016 ($p$ = .826) | -.014 ($p$ = .846) | -.002 ($p$ = ,975) |
| TF | .023 ($p$ = .750) | .021 ($p$ = .774) | -.021 ($p$ = .777) |
| JP | .005 ($p$ = .949) | - .013 ($p$ = .860) | .019 ($p$ = .792) |

## DISCUSSION

The present study did not find any relationship between the scales of the MBTI and the factors of the CAS. This might be due to differences between Michael Jackson and celebrities in general. Alternatively, it might reflect differences in the measure used by Stever and the measure used in the present study. Clearly, more research is warranted. Specifically, the use of the NEO-PI may be warranted due to its broad nature and strong empirical support.

## REFERENCES

Ashe, D. D. & McCutcheon, L. E. (2001). Shyness, loneliness and attitudes toward celebrities. *Current Research in Social Psychology, 6,* 124-133. [on-line]. Available: http://www.uiowa.edu/~grpproc/crisp/crisp.6.9.html.

Dietz, P. E., Matthews, D. B., Van Duyne, C., Martell, D. A., Parry, C. D. H., Stewart, T. S., Warren, J., & Crowder, J. (1991). Threatening and otherwise inappropriate letters to Hollywood celebrities. *Journal of Forensic Science, 36,* 185-209.

Ferris, K. O. (2001). Through a glass, darkly: The dynamics of fan-celebrity encounters. *Symbolic Interaction, 24,* 25-47.

Leets, L. & de Becker, G. (1995). Fans: Exploring expressed motivations for contacting celebrities. *Journal of Language & Social Psychology, 14,* 102-121.

Maltby, J., Houran, J., Lange, R., Ashe, D., & McCutcheon, L. E. (2002). Thou shalt worship no other gods - unless they are celebrities: the relationship between celebrity worship and religious orientation. *Personality and Individual Differences, 32,* 1157-1172.

Maltby, J., Houran, J., & McCutcheon, L. E. (2002, in press). Locating the dimensions of celebrity worship with Eysenck's theory of personality. *Journal of Mental Diseases and Nervous Disorders.*

Maltby, J., McCutcheon, L. E., Ashe, D. D. & Houran, J. (2001). The self-reported psychological well-being of celebrity worshipers. *North American Journal of Psychology, 3,* 444-452.

McCutcheon, L. E., Lange, R. & Houran, J. (2002). Conceptualization and measurement of celebrity worship. *British Journal of Psychology, 93,* 67-87.

McCutcheon, L. E., & Maltby, J. (2002). Personality attributions about individuals high and low in the tendency to worship celebrities. *Current Research in Social Psychology, 7,* 325-338. [on-line] Available: http://www.uiowa.edu/~grpproc/crisp/crisp.7.19.html.

Morton, J. (1997). Don't worry it will go away. *American Journalism Review, 19,* November, 52.

Myers, I. B., McCaulley, M. H., Quenk, N. L., & Hammer, A. L. (1998). *Manual: A guide to the development and use of the Myers-Briggs Type Indicator.* Palo Alto, CA: Consulting Psychologists Press.

Raviv, A., Bar-Tal, D. Raviv, A. Ben-Horin, A. (1996). Adolescent idolization of pop singers Causes, expressions and reliance. *Journal of Youth and Adolescence, 25,* 631-650.

Stever, G. S. (1991a). Imaginary social relationships and personality correlates: The case of Michael Jackson and his fans. *Journal of Psychological Type, 21,* 68-76.

Stever, G. S. (1991b). The *Celebrity Appeal Questionnaire. Psychological Reports, 68,* 859-866.

# Influence of Sensation Seeking on Boys' Psychosocial Adjustment

Rebecca P. Ang
*Nanyang Technological University, Singapore*

Anna Woo
*Anglo Chinese School (Independent), Singapore*

This study investigated the relationship between sensation seeking and several psychosocial adjustment variables in adolescent boys: attitudes towards school and externalizing problems such as hyperactivity, delinquency and aggression. The sample was from Singapore, and consisted of 143 seventh grade boys who completed self-report inventories. Teacher ratings on these boys were also obtained. High sensation seeking boys were found to have more negative attitudes towards school, and were more inclined towards hyperactivity and delinquency than were low sensation seeking boys. High sensation seeking boys, however, did not differ from low sensation seeking boys on aggression, as had been predicted. Implications of these findings for education and intervention are discussed.

Recent research has highlighted the importance of examining personality or individual differences as risk factors for antisocial behavior and substance abuse (Conrod, Phil, Stewart, & Dongier, 2000; Perkins, Gerlach, Broge, Fonte, & Wilson, 2001; Sher, Bartholow, & Wood, 2000; Wills, Sandy, & Shinar, 1999). Specifically, sensation seeking has often been suggested as one possible personal characteristic that may be responsible for the initiation and maintenance of certain problem behaviors and attitudes (Huba & Bentler, 1983; Perkins, Gerlach, Broge, Grobe, & Wilson, 2000). The present study examined the effects of sensation seeking on various psychosocial adjustment variables in adolescent boys.

## Psychosocial Adjustment

Adolescence is a critical stage of development particularly important for youths to successfully acquire and eventually perform adult roles (e.g., Newcomb & Bentler, 1988). This transitional period often involves exploration and experimentation with a variety of new behaviors and attitudes, several of which may conflict with traditional norms of society.

---

*Author info*: Correspondence should be sent to: Rebecca P. Ang, Psychological Studies Academic Group, National Institute of Education, Nanyang Tech. University, 1 Nanyang Walk, Singapore 637616. Email: phrang@nie.edu.sg.
*North American Journal of Psychology*, 2003, Vol: 5, No. 1, 121-136.
© NAJP

These behaviors and attitudes can be viewed as problematic, and may reflect adolescent maladjustment. Newcomb and McGee (1991) define juvenile delinquency and deviant behavior, broadly speaking, as reflective of psychosocial maladjustment, and they argue that these may take several specific forms such as drug and alcohol use or abuse, vandalism, or disciplinary problems in school. Furthermore, Newcomb and McGee (1991) also argued that these behaviors manifested by youths may reflect certain nontraditional attitudes such as disregard for the law and disinterest in conventional school activities. The specific psychosocial adjustment variables assessed in the present study are attitude towards school and externalizing problems (e.g., hyperactivity, delinquency and aggression).

According to problem behavior theory, a variety of behaviors considered problematic during adolescence are associated with one another (Donovan & Jessor, 1985). Empirical data demonstrate that there are positive correlations among adolescent problem behaviors such as delinquent behavior (e.g., lying, cheating), drug use, drinking, and other deviant behaviors (Elliott, Huizinga, & Ageton, 1985). Blum, Beuhring and Rinehart (2000) reported that the most prominent risk factor for youth, regardless of gender or ethnicity, is frequent problems with schoolwork. Such youth are more likely than others to experience or be involved with risky health behaviors using the measures of cigarette use, alcohol use, suicide risk, and violence involving weapons. Furthermore, Elliot et al. (1985) found that youths who possess negative attitudes towards school, work and authority had a tendency to be more antisocial. Taken together, research in this area appears to support Jessor and Jessor's (1977), and Kandel's (1980) argument that problem behaviors in adolescence tend to cluster together, and that there is a pattern of psychosocial maladjustment, such that a young person who engages in one of these deviant activities is likely to engage in other deviant activities as well.

### Sensation Seeking and Its Correlates

Zuckerman (1979) defined the sensation seeking trait as "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences" (p. 10). A closely related construct, novelty seeking, is defined as a tendency to seek out novel and exciting experiences (Cloninger, 1987a, 1987b). Some researchers use the terms "sensation seeking" and "novelty seeking" interchangeably (e.g., Conrod et al., 2000; Wills, Windle, & Cleary, 1998), while others do not (e.g., Newcomb & McGee, 1991; Sher et al., 2000). There is some recent research to suggest that novelty seeking is highly correlated with sensation seeking (Wills, Vaccaro, & McNamara, 1994; Zuckerman & Cloninger, 1996). At present it is still unclear whether sensation seeking and novelty seeking are two separate but highly related constructs or if these constructs are actually measuring one and the same thing but termed differently by different researchers. For the purposes of the present research, sensation seeking and novelty seeking are used interchangeably.

Sensation seeking has long been recognized as an important explanatory construct for a variety of behaviors. Farley (1981) has pointed out the role of unstimulating educational methods in dampening the intellectual curiosity of young sensation seekers and increasing the likelihood of delinquent behavior as a consequence. Researchers have argued that dull classroom routines could possibly lead to a strong sense of boredom in high sensation seekers who are more likely to be poor in sustained attention, hence paving the way for behavior problems like being restless, talkative and disruptive (Blum et al., 2000). Students who are inclined towards sensation seeking are likely to have a yearning for more exciting and varied experiences in life than what the classroom has to offer much of the time. Studies have shown that positive intellectual outcomes have been related to appropriate classroom conduct and compliance (Wentzel, 1993).

Youth who encounter frequent problems with schoolwork are more likely to be involved with risky health behaviors such as cigarette and alcohol use (Blum et al., 2000). Classroom observations of antisocial children show that they spend relatively less time on task (Shinn, Ramsay, Walker, O'Neill, & Steiber, 1987). Classroom observation studies also showed a deficiency in academic skills (e.g., paying attention, staying seated, answering questions) in antisocial children (Hops & Cobb, 1974). A statistically significant relationship between antisocial behavior and failure to complete homework assignments (Fehrman, Keith, & Reimers, 1987) is also typical. Antisocial children are also likely to experience major adjustment problems in the areas of academic achievement and peer social relations (Kazdin, 1987). Carter and Stewin's study (1998) revealed a high incidence of psychopathology among violent junior high male students. Of interest is the finding that students tended to indicate dissatisfaction with school, dissatisfaction with teachers and a thrill-seeking attitude as major areas of concern. Taken together, research appears to indicate a link between sensation seeking, deficiency in academic skills, antisocial, non-confirming behavior, and a general dissatisfaction with teachers, the school, and the schooling process.

Child psychopathology has been broadly classified in the literature into two major dimensions: one reflecting externalizing or undercontrolled problems and the other reflecting internalizing or overcontrolled problems (Mash & Dozois, 1996). The internalizing dimension describes feelings or states that are viewed as inner-directed, and those commonly identified in research include anxiety, depression, withdrawn behavior and somatic complaints (Achenbach & Edelbrock, 1978; Reynolds & Kamphaus, 1992). The externalizing dimension describes problems often thought of as directed at others, such as hyperactivity, delinquency (labeled conduct problems by some researchers) and aggression (Achenbach & Edelbrock, 1978; Reynolds & Kamphaus, 1992). As hyperactivity, aggression and delinquency are the three behaviors that this paper will investigate, further elaboration will only be provided for these behaviors on the externalizing dimension. Hyperactivity is the tendency to be overly active and to rush through activities, or to act without thinking. Delinquency is the tendency to engage in rule-breaking and antisocial behavior. Aggression is the tendency to act in a physically or verbally hostile manner that is threatening to others. Thus according to this framework, hyperactivity, delinquency, and aggression constitute a single behavioral dimension of externalizing problems which is a notion not shared by all researchers (e.g., Frick et al., 1993; White & Labouvie, 1994).

Frick et al. (1993), for example, disagree with the Internalizing-Externalizing classification scheme. They assert that high inter-correlations among subscales are a necessary but insufficient condition to argue for unidimensionality. It is also essential for subscales to relate identically to theoretically linked covariates. In the case of the externalizing dimension, the subscales of Delinquency and Aggression (Achenbach, 1993) while highly correlated, related substantially differently to key covariates of age and gender (Cheong & Raudenbush, 2000). Hence, Cheong and Raudenbush (2000) argued that it would be inappropriate to combine Delinquency and Aggression items as important differential effects will be masked and this may lead researchers to make erroneous inferences. A review of the literature suggests that sensation seeking is associated with impulsivity/hyperactivity and delinquency or antisocial behavior but does not appear to be related to aggression.

Zuckerman and Link (1968) reported that individuals high on sensation seeking are more impulsive, antisocial, nonconformist, and less anxious. This was confirmed by Jaffe and Archer (1987), who found that sensation seeking is typically the most powerful predictor of substance use and abuse in predicting drug use across 12 pharmacological drug categories. Similarly, sensation seeking has been associated with greater sensitivity to nicotine, which could predispose individuals to the risk of becoming smokers (Perkins et al., 2000). Newcomb and McGee (1991) reported strong associations between both illicit and licit drug use and sensation seeking. Later research also indicated that traits linked to impulsivity/behavioral disinhibition were most strongly and consistently associated with substance use and abuse problems (Cloninger, Sigvardsson, Przybeck, & Svrakic, 1995; Hutchison, Wood, & Swift, 1999; Kilbey, Downey, & Breslau, 1998; Mitchell, 1999). Wills et al. (1998) studied 949 eighth-grade students in four public schools in New York using Cloninger's *Tridimensional Personality Questionnaire* (Cloninger, 1987a). Their results indicated that novelty seeking was correlated with poor self-control, impulsiveness and risk-taking. Wills et al. (1998) also argued that poor self-control was an important component of a disinhibitory dimension usually construed as conducive to conduct problems or delinquent behavior. Newman and coworkers (e.g., Newman, 1987; Wallace, Newman, & Bachorowski, 1991) have postulated that impulsivity, hyperactivity, antisocial and delinquent behavior are aspects of a common syndrome of disinhibition characterized by a pattern of responses essentially determined by immediate reinforcement contingencies. This syndrome of disinhibition is characteristic of high sensation seeking individuals.

Based on the existing literature, it appears that sensation seeking is strongly associated with impulsivity and hyperactivity. Also, research has demonstrated that high sensation seeking individuals showed a tendency towards delinquency and antisocial behavior. Research, however, is still unclear about whether sensation seeking as a personal characteristic influences adolescents' level of aggression. While aggression and delinquent behavior are closely related, they can be argued to be separate and independent constructs. Reynolds and Kamphaus (1992) report correlations of between 0.50 and 0.70 for aggression and delinquent behavior at various ages which suggests that while these two constructs are moderately to highly correlated, they are not identical. Further, as reviewed earlier, high intercorrelations between subscales is insufficient to argue for the unidimensionality of the externalizing dimension (Cheong & Raudenbush, 2000; Frick et al., 1993).

### The Present Study

Studies conducted in Asia that explore the specific influence of sensation seeking on adolescent boys' psychosocial adjustment, such as externalizing problems (which consists of hyperactivity, delinquency, and aggression), and attitude towards school, are currently lacking. While sensation seeking has frequently been suggested as a possible personality characteristic that may be responsible for the emergence and maintenance of problem attitudes and behaviors (Huba & Bentler, 1983), this has to be empirically investigated. Also, it would be interesting to explore the nature of the relationship of sensation seeking with various psychosocial adjustment variables in an Asian cultural context.

Sensation seeking seems to be a necessary but not a sufficient condition for antisocial or deviant behavior. Nonetheless, sensation seeking could serve to differentiate those who are relatively more socially deviant and who may be more likely to engage in antisocial behavior in school or in the community (Zuckerman, 1994). If sensation seeking as a personality characteristic contributes to certain problem behaviors, then educational and psychological interventions could be designed to help meet the needs of these adolescents in more socially acceptable ways.

We hypothesized that high sensation seeking boys would have more negative attitudes towards school. Externalizing problems can be conceptualized as consisting of subcomponents of hyperactivity, delinquency and aggression (Reynolds & Kamphaus, 1992). Based on existing research literature, we expected boys high in sensation seeking to exhibit more difficulties with hyperactivity and delinquency but not with aggression, compared with boys low in sensation seeking. Aggression, if distinguished from antisocial or delinquent behavior, does not appear to be consistently associated with high sensation seeking individuals.

## METHOD

### Participants and Procedure

The participants were 143 Secondary Two (Grade 7) boys, mean age 14 years, from a boys' school in Singapore. Self-reported ethnic identification indicated that the sample was approximately 92% Chinese, 1.5% Malay, and 6.5% Indian.

In Singapore, permission for conducting research and data collection is typically granted by the building Principal. Approval was obtained for the researchers to conduct the research investigation at this particular school prior to data collection. In addition, consent to participate in this study was obtained from all students involved. Participation was strictly voluntary and students' responses obtained were kept confidential. A self-report questionnaire (in English) was administered to students in an organized classroom setting. The teachers who administered the self-report questionnaire followed a standardized protocol in giving instructions to students. Students were instructed not to write their name on the questionnaire and were assured of the confidentiality of their responses. While students were not expected to have difficulty understanding the statements in the questionnaire, as these statements have an approximate Grade 4 reading level, teachers who administered the questionnaires were available to answer any queries.

Eight teachers were selected to complete teacher-rated questionnaires in English. The teachers selected were those who had taught the respective classes at least three class periods (each of 40 minutes duration) a week in year 2001 and had taught the participants for a minimum of two school semesters. Each teacher provided ratings for approximately 18 boys. Similarly, teachers' consent to participate in the study was sought and participation was strictly voluntary. Teachers' responses were also kept confidential.

**Measures**

Two forms of the *Behavior Assessment System for Children* (BASC) were used: *Self Report of Personality* (SRP) and *Teacher Rating Scale* (TRS). The BASC (Reynolds & Kamphaus, 1992) is a multidimensional approach to evaluating behavior and self-perceptions of children and adolescents between the ages of 4 and 18. The SRP (Reynolds & Kamphaus, 1992) is an omnibus personality inventory consisting of statements that children and adolescents respond to. The TRS (Reynolds & Kamphaus, 1992) is a measure of adaptive and problem behaviors in the school setting. For the purposes of this study, two scales of the SRP (*Sensation Seeking* and *Attitude to School*) and three scales of the TRS (*Hyperactivity, Conduct Problems* and *Aggression*) were used. The SRP consists of statements that are responded to as *True* or *False*. The TRS contains descriptors of behaviors that the teacher rates on a four-point scale of frequency, ranging from *Never* to *Almost Always*.

*SRP - Sensation Seeking Scale.* The *Sensation Seeking Scale* (14 items, alpha = 0.70) assesses the tendency of an adolescent to like noise, to seek excitement and to engage in potentially risky activities with the use of statements like "I like it when my friends dare me to do something" and "I like to take chances." A high score on this scale indicates that the respondent has a tendency to be bored easily, to have a high energy level, and to engage in risky and potentially delinquent behavior.

*SRP - Attitude to School Scale.* The *Attitude to School* scale (10 items, alpha = 0.83) measures the adolescent's general opinion of the school as well as level of comfort with matters pertaining to school. A high score on this scale indicates that the respondent may be facing a sense of hostility and dissatisfaction regarding school. Examples of items from the scale include "I can hardly wait to quit school" and "School is a waste of time".

*TRS – Hyperactivity Scale.* The *Hyperactivity* scale (13 items, alpha = 0.94) assesses the tendency of a student to be overly active, rush through work or activities, seek attention, being unable to wait to take a turn and act without thinking. High scores indicate a higher degree of hyperactivity and impulsivity. Examples of statements in the scale include "Hurries through assignments" and "Interrupts others when they are speaking".

*TRS - Conduct Problems Scale.* The *Conduct Problems* scale (12 items, alpha = 0.82) assesses the student's tendency to engage in delinquent and antisocial behavior with little or no regard for rules. This scale, which is similar to Delinquency or Antisocial Behavior on other instruments such as the *Teacher's Report Form* (Achenbach, 1991), measures socially disruptive, rule-breaking and deviant behaviors that are characteristic of the DSM-IV category of Conduct Disorder. Such behaviors include cheating in school, stealing, smoking, drinking, and truancy. Statements in this scale include "Skips classes at school," "Has been suspended from school," and "Smokes or chews tobacco."

*TRS – Aggression Scale.* The *Aggression* scale (14 items, alpha = 0.95) assesses the tendency of a student to act in a verbally or physically hostile manner that is threatening towards others. Both verbal and physical aggression are assessed using items incorporating behaviors like name-calling, bullying, teasing and talking back to teachers. High scores indicate more maladaptive behavior in the aggression domain. Examples of statements in this scale include "Blames others," "Talks back to teachers," "Hits other children" and "Argues when denied own way."

## RESULTS

This study used quartile splits to obtain the "high" and "low" Sensation Seeking groups, and *t*-tests were performed to test our hypotheses (see Table 1). Because there were four dependent variables in the present study, the Bonferroni adjustment technique was applied to correct the alpha level (Huck & Cormier, 1996). In line with the

TABLE 1 Comparison of High and Low Sensation Seeking Boys on Various Adjustment Variables

| | High Sensation Seekers ($n = 42$) | | Low Sensation Seekers ($n = 36$) | | | |
|---|---|---|---|---|---|---|
| Scale | M | SD | M | SD | *t* | *p* |
| THYP | 3.26 | 4.40 | 1.14 | 2.14 | 2.64* | .01 |
| TCP | .60 | .96 | .14 | .42 | 2.63* | .01 |
| TAGG | 2.14 | 3.40 | 1.50 | 2.43 | .95 | *ns* |
| SAS | 2.95 | 2.59 | 1.61 | 1.69 | 2.74* | .01 |

*Note.* THYP = Teacher's Rating Scale (TRS) Hyperactivity Score; TCP = TRS Conduct Problems Score; TAGG = TRS Aggression Score; SAS = Student's Attitude to School Score. * $p < 0.01$.

hypothesis, high sensation seeking boys scored higher on Hyperactivity compared to low sensation seeking boys. The mean *Hyperactivity* score for boys high on *Sensation Seeking* ($M = 3.26$, $SD = 4.40$) was found to be significantly higher than that for boys low on *Sensation Seeking* ($M = 1.14$, $SD = 2.14$), $t_{(76)} = 2.64$, $p < 0.01$. A similar pattern of results was found for the *Conduct Problems* scale. High sensation seeking boys ($M = .60$, $SD = .96$) and low sensation seeking boys ($M = .14$, $SD = .42$) were statistically different from each other, $t_{(76)} = 2.63$, $p < 0.01$. As expected, there was no significant difference in mean scores on the *Aggression* scale between high sensation seeking boys and low sensation seeking boys. The mean *Aggression* score for boys high on Sensation seeking ($M = 2.14$, $SD = 3.40$) was not found to be significantly higher than that for boys low on sensation seeking ($M = 1.50$, $SD = 2.43$), $t_{(76)} = .95$, *ns*. Results from correlational analyses (see Table 2) also revealed similar findings: sensation seeking was significantly correlated with Hyperactivity, $r = .26$, $p < .01$; and Conduct Problems, $r = .22$, $p < .01$. However, sensation seeking was not significantly correlated with Aggression, $r = .12$, *ns*.

TABLE 2 Summary of Correlations between Sensation Seeking and Adjustment Variables (n=143)

| | Variable | | | | |
|---|---|---|---|---|---|
| Variable | 1 | 2 | 3 | 4 | 5 |
| 1. SSS | - | .26* | .22* | .12 | .30** |
| 2. THYP | | - | .56** | .51** | .23* |
| 3. TCP | | | - | .31** | .15 |
| 4. TAGG | | | | - | .14 |
| 5. SAS | | | | | - |

*Note.* SSS = *Student's Sensation Seeking* Score; THYP = *Teacher's Rating Scale* (TRS) *Hyperactivity* Score; TCP = *TRS Conduct Problems* Score; TAGG = TRS *Aggression* Score; SAS = *Student's Attitude to School* Score. * $p < 0.01$. ** $p < 0.001$.

As predicted, the mean *Attitude to School* score for boys high on sensation seeking ($M = 2.95$, $SD = 2.59$) was found to be significantly higher than that for boys low on sensation seeking ($M = 1.61$, $SD = 1.69$), $t_{(76)} = 2.74$, $p < 0.01$. Correlational analyses yielded similar findings: sensation seeking was significantly correlated with *Attitude to School*, $r = .30$, $p < .01$.

## DISCUSSION

Sensation seeking was significantly related to hyperactivity, delinquency and attitude to school but was not significantly related to aggression, as predicted. The present study extended the research base by specifically investigating, in a Singapore context, the relationship between sensation seeking and adolescent boys' psychosocial adjustment.

In line with our hypotheses, sensation seeking was significantly related to variables of hyperactivity and delinquency but not significantly related to aggression. Findings from the present study are in agreement with Frick et al.'s (1993) and Cheong and Raudenbush's (2000) argument that it would be inappropriate to subsume aggression under a single externalizing dimension together with the other subscales (e.g., delinquent behavior), as that might inadvertently mask subscale-specific effects.

In addition, the finding that sensation seeking is related to hyperactivity and delinquency, but not to aggression, could in part be explained by various theories and models of personality structure. Eysenck and Eysenck (1985) proposed a three-dimensional model of personality: introversion-extroversion (E), neuroticism (N), and psychoticism (P), and a psychobiological model as an extension to and to parallel the three personality dimensions. Tellegen (1985) proposed a three-factor model similar to Eysenck's and labeled the E factor Positive Emotionality, the N factor Negative Emotionality, and the P factor Constraint. The five-factor model developed by McCrae and Costa (1985) is probably the most widely-used, and has found increasing support (Digman, 1990; John, 1990). The dimensions in this model include Conscientiousness, Agreeableness, Openness to Experience and Eysenck's E and N. Both McCrae and Costa (1985), and Tellegen (1985) subsumed aggressiveness or hostility under their N dimensions. Subsequent research has also provided support for aggressiveness being placed along the N dimension (Church, 1994; Tellegen & Waller, 1994). Eysenck and Eysenck (1985) initially argued that sensation seeking was regarded as a subtrait of E, and impulsivity and antisocial behavior (reflective of conduct problems or delinquent behavior) subsumed under P. While the exact location of sensation seeking in the factor space is still being debated, findings from later research suggested that sensation seeking was more accurately reflected under P (Zuckerman, Kuhlman, & Camac, 1988). Taken together, existing research suggests that while aggression or aggressiveness lies on the N dimension, sensation seeking, impulsivity / hyperactivity and conduct problems (or delinquency / antisocial behavior) lie on the P factor. Given this framework, it is not surprising that sensation seeking was significantly related to both hyperactivity and conduct problems but not significantly related to aggression.

Results from the present study indicated that high sensation seeking boys had significantly higher scores on attitudes towards school compared with low sensation seeking boys. A higher score on attitudes towards school indicates greater dissatisfaction towards school and the schooling process. Durlak (1997) argued that schools can significantly impact students and also discussed the role of social norms and values in influencing students' performance. Jessor and Jessor (1977) in their classic study on problem behavior of junior high school youth and college youth found that conventional behavior measured by school involvement for example, was negatively related to problem behavior. They concluded that a sense of bonding with the school could help to reduce problem behavior. This is supported by the social control theory (Gottfredson & Hirschi, 1990; Hawdon, 1996) which states that individuals who do not have strong bonds to institutions of society such as family, school and workplace, are likely to behave unconventionally and may have a higher likelihood of becoming socially deviant. In the light of other research findings, results from the present study suggest that because high sensation seeking individuals possess a more negative view of school, regular school activities and the schooling process, they posses a greater risk towards various forms of problematic or socially deviant behavior.

Sensation seeking may be considered a risk-factor for or potential precursor to antisocial behavior or juvenile delinquency. Adolescent boys inclined towards sensation-seeking have a propensity for hyperactivity, conduct problems and a negative attitude towards school, but they do not necessarily have a tendency towards aggression. It is also important to recognize that while aggression as a construct is closely related to delinquency and is one of three components of the externalizing behavior dimension, it remains independent and unassociated with sensation seeking. This is an important step towards understanding sensation seeking and some of its correlates.

The willingness of high sensation seeking individuals to take physical and social risks for the sake of novel and complex experiences makes them open to influence which, if misguided, could lead to undesirable consequences. Several researchers have argued that since sensation seeking is a displaceable motive that can be satisfied by a variety of activities, one way to change behavior is through substitution of stimulating, meaningful activities (Newcomb & McGee, 1991; Wills et al., 1999). These researchers state that there are aspects of sensation seeking that are modifiable such as delaying gratification of a desire or using verbal cues to restrain impulsive behaviors in a potentially problematic situation. Wills et al. (1999) for example, recommend vocational guidance for high sensation seeking individuals so that these individuals could be encouraged to take jobs with varied stimulation to help displace the stimulation of drug use or other delinquent behavior.

Shortcomings limiting generalization from this study should be addressed. There was limited sampling, as all participants were male adolescents from the same school. Replication of results across gender is needed. This study used self-report questionnaires as well as teacher-ratings. Teacher ratings of behavior may actually be measuring perceptions of behavior or past behavior rather than actual and current behavior (Skiba, 1989). A one-time rating done by one teacher is likely to have some degree of partiality depending on the kind of rapport the teacher has had with the student. Teachers have varying levels of tolerance just as students behave differently in different contexts. Teachers also have different classroom management styles and students respond accordingly. The fact that some teachers are unaware of certain traits in students does not necessarily mean that those traits are non-existent. One way of overcoming this limitation is to identify two teachers who have most contact with the respective participants and obtain two sets of ratings for each participant for comparison, and an average could be obtained.

Another associated limitation is that the present study used an Asian sample (both students and teachers) from Singapore, and as such, the findings have limited applicability outside the Asian context. Therefore, results from the present study need to be interpreted with caution until further replication studies are conducted with the use of other ethnic groups. Replication studies using a more representative sample would be useful in increasing our understanding on whether these findings are culturally universal. Finally, some of the correlations are weak and a significant correlation could have been obtained primarily due to sample size. Hence further replication studies will be necessary to strengthen the findings obtained.

## REFERENCES

Achenbach, T. M. (1991). *Teacher's Report Form.* Burlington, VT: Author.

Achenbach, T. M. (1993). *Integrative guide for the 1991 CBCL/4-18, YSR, and TRF profiles.* Burlington, VT: Author.

Achenbach, T. M., & Edelbrock, C. S. (1978). The classification of child psychopathology: A review and analysis of empirical efforts. *Psychological Bulletin, 85,* 1275-1301.

Blum, R. W., Beuhring, T., & Rinehart, P. M. (2000). *Protecting teens: Beyond, race, income, and family structure.* Minneapolis, MN: University of Minneasota Printing Services.

Carter, S. P., & Stewin, L. L. (1999). School violence in the Canadian context: An overview and model for intervention. *International Journal for the Advancement of Counseling, 21*, 267-277.

Cheong, Y. F., & Raudenbush, S. W. (2000). Measurement and structural models for children's problem behaviors. *Psychological Methods, 5*, 477-495.

Church, A. T. (1994). Relating the Tellegen and five-factor models of personality structure. *Journal of Personality and Social Psychology, 67*, 898-909.

Cloninger, C. R. (1987a). Neurogenetic adaptive mechanisms in alcoholism. *Science, 236*, 410-416.

Cloninger, C. R. (1987b). A systematic method for clinical description and classification of personality variants. *Archives of General Psychiatry, 44*, 573-588.

Cloninger, C. R., Sigvardsson, S., Przybeck, T. & Svrakic, D. M. M. (1995). Personality antecedents of alcoholism in a national area probability sample. *European Archives of Psychiatry and Clinical Neuroscience, 245*, 239-244.

Conrod, P. J., Phil, R. O., Stewart, S. H., & Dongier, M. (2000). Validation of a system of classifying female substance abusers on the basis of personality and motivational risk factors for substance abuse. *Psychology of Additive Behaviors, 14*, 243-256.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology, 41*, 417-440.

Donovan, J. E., & Jessor, R. (1985). Structure of problem behavior in adolescence and young adulthood. *Journal of Consulting and Clinical Psychology, 53*, 890-904.

Durlak, J. A. (1997). *Successful prevention programs for children and adolescents*. New York: Plenum Press.

Elliot, D. S., Huizinga, D., & Ageton, S. S. (1985). *Explaining delinquency and drug use*. Bevely Hills, CA: Sage.

Eysenck, H. J., & Eysenck, M. W. (1985). *Personality and individual differences: A natural science approach*. New York: Plenum Press.

Farley, F. H. (1981). Basic process individual differences: A biologically based theory of individualization for cognitive, affective, and creative outcomes. In F. H. Farley & N. J. Gordon (Eds.), *Psychology and education: The state of the union*. Berkeley, CA: McCutchon Publishing.

Fehrman, P. G., Keith, T. Z., & Reimers, T. M. (1987). Home influences on school learning: Direct and indirect effects of parental involvement in high school grades. *Journal of Educational Research, 80*, 330-337.

Frick, P. J., Lahey, B. B., Loeber, R., Tannenbaum, L., Van Horn, Y., Christ, M. A. G., Hart, E. A., & Hanson, K. (1993). Oppositional defiant disorder and conduct disorder: A meta-analytic review of factor analyses and cross-validation in a clinic sample. *Clinical Psychology Review, 12*, 319-340.

Gottfredson, M., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

Hawdon, J. (1996). Deviant lifestyles: The social control of daily routines. *Youth and Society, 28*, 162-188.

Hops, H., & Cobb, J. A. (1974). Initial investigations into academic survival-skill training, direct instruction, and first-grade achievement. *Journal of Educational Psychology, 66*, 548-553.

Huba. G. J.. & Bentler. P. M. (1983). Causal models of the development of law abidance and its relationship to psychosocial factors and drug use. In W.S. Laufer & J. M. Day (Eds.), *Personality theory, moral development, and criminal behavior* (pp. 165-215). Lexington. MA: Lexington Books.

Huck. S. W., & Cormier. W. H. (1996). *Reading statistics and research* (2nd ed.). New York: HarperCollins Publishers Inc.

Hutchison. K. E., Wood. M. D., & Swift. R. (1999). Personality factors moderate subjective and psychophysiological responses to d-amphetamine in humans. *Experimental and Clinical Psychopharmacology*, *7*. 493-501.

Jaffe. L. T., & Archer. R. P. (1987). The prediction of drug use among college students from MMPI. MMCI, and sensation seeking scales. *Journal of Personality Assessment*, *51*, 243-253.

Jessor, R., & Jessor, S. L., (1977). *Problem behavior and psychosocial development: A longitudinal study of youth.* New York: Academic Press.

John, O. P. (1990). The "Big Five" factor taxonomy: Dimensions of personality in the natural language and in questionnaires. In L. A. Pervin (Ed.), *Handbook of personality theory and research* (pp. 66-100). New York: The Guilford Press.

Kandel, D. B. (1980). Drug and drinking behavior among youth. In A. Inkeles, N. J. Smelser, & R. H. Turner (Eds.), *Annual review of sociology* (Vol. 6, pp 235-285). Palo Alto. CA: Annual Reviews Press.

Kazdin, A. E. (1987). *Conduct disorders in childhood and adolescence.* Newbury Park, CA: Sage.

Kilbey, M. M., Downey, K., & Breslau, N. (1998). Predicting the emergence and persistence of alcohol dependence in young adults: The role of expectancy and other risk factors. *Experimental and Clinical Psychopharmacology*, *6*, 149-156.

Mash, E. J., & Dozois, D. J. A. (1996). Child psychopathology: A developmental-systems perspective. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology* (pp. 3-60). New York: The Guilford Press.

McCrae, R. R., & Costa, P. T. (1985). Comparison of EPI and Psychoticism scales with measures of the five-factor model of personality. *Personality and Individual Differences*, *6*, 587-597.

Mitchell. S. H. (1999). Measures of impulsivity in cigarette smokers and nonsmokers. *Psychopharmacology*, *146*. 455-464.

Newcomb, M. D., & Bentler, P. M. (1988). *Consequences of adolescent drug use.* Newbury Park, CA: Sage.

Newcomb, M. D., & McGee, L. (1991). Influence of sensation seeking on general deviance and specific problem behaviors from adolescence to young adulthood. *Journal of Personality and Social Psychology*, *61*, 614-628.

Newman, J. P. (1987). Reaction to punishment in extraverts and psychopaths: Implications for the impulsive behavior or disinhibited individuals. *Journal of Research in Personality*, *21*, 464-480.

Perkins. K. A., Gerlach. D., Broge, M., Grobe. J. E., & Wilson. A. (2000). Greater sensitivity to subjective effects of nicotine in nonsmokers high in sensation seeking. *Experimental and Clinical Psychopharmacology*, *8*. 462-471.

Perkins, K. A., Gerlach, D., Broge, M., Fonte, C., & Wilson, A. (2001). Reinforcing effects of nicotine as a function of smoking status. *Experimental and Clinical Psychopharmacology, 9*, 243-250.

Reynolds, C. R., & Kamphaus, R. W. (1992). *Behavior Assessment System for Children Manual*. US: American Guidance Service, Inc.

Sher, K. J., Bartholow, B. D., & Wood, M. D. (2000). Personality and substance abuse disorders: A prospective study. *Journal of Consulting and Clinical Psychology, 68*, 818-829.

Shinn, M. R., Ramsay, E., Walker, H. M., O'Neill, R. E., & Steiber, S. (1987). Antisocial behavior in school settings: Initial differences in an at-risk and normal population. *Journal of Special Education, 21*, 69-84.

Skiba, R. J. (1989). The importance of construct validity: Alternative models for the assessment of behavioral disorders. *Behavioral Disorders, 14*, 175-185.

Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety with an emphasis on self-report. In A. H. Tuma & J. D. Maser (Eds.), *Anxiety and the anxiety disorders* (pp. 681-706). Hillsdale, NJ: Erlbaum.

Tellegen, A., & Waller, N. G. (1994). Exploring personality through test construction: Development of the *Multidimensional Personality Questionnaire*. In S. R. Briggs & J. M. Cheek (Eds.), *Personality measures: Development and evaluation* (Vol. 1, pp. 133-161). Greenwich, CT: JAI Press.

Wallace, J. F., Newman, J. P., & Bachorowski, J. (1991). Failures of response modulation: Impulsive behavior in anxious and impulsive individuals. *Journal of Research in Personality, 25*, 23-44.

Wentzel, K. R. (1993). Does being good make the grade? Social behavior and academic competence in the middle school. *Journal of Educational Psychology, 85*, 357-364.

White, H. R., & Labouvie, E. W. (1994). Generality versus specificity of problem behavior: Psychological and functional differences. *Journal of Drug Issues, 24*, 55-74.

Wills, T. A., Sandy, J. M., & Shinar, O. (1999). Cloninger's constructs related to substance abuse level and problems in late adolescence: A mediational model based on self-control and coping motives. *Experimental and Clinical Psychopharmacology, 7*, 122-134.

Wills, T. A., Vaccaro, D. & McNamara, G. (1994). Novelty seeking, risk taking, and related constructs as predictors of adolescent substance use: An application of Cloninger's theory. *Journal of Substance Abuse, 6*, 1-20.

Wills, T. A., Windle, M., & Cleary, S. D. (1998). Temperament and novelty seeking in adolescent substance use: Convergence of dimensions of temperament with constructs from Cloninger's theory. *Journal of Personality and Social Psychology, 74*, 387-406.

Zuckerman, M. (1994*). Behavioral expressions and biosocial bases of sensation seeking*. New York: Cambridge University Press.

Zuckerman, M. (1979). *Sensation seeking: Beyond the optimal level of arousal*. Hillsdale, NJ: Erlbaum.

Zuckerman, M., & Cloninger, C. R. (1996). Relationships between Cloninger's, Zuckerman's, and Eysenck's dimensions of personality. *Personality and Individual Differences, 21*, 283-285.

Zuckerman, M., Kuhlman, D. M., & Camac, C. (1988). What lies beyond E and N? Factor analyses of scales believed to measure basic dimensions of personality. *Journal of Personality and Social Psychology, 54*, 96-107.

Zuckerman, M., & Link, K. (1968). Construct validity for the Sensation Seeking Scale. *Journal of Consulting and Clinical Psychology, 32*, 420-426.

# An Interview With Adam Blatner About Psychodrama

Adam Blatner
*retired*

(interviewed on behalf of NAJP by )
Michael F. Shaughnessy
*Eastern New Mexico University*

Adam Blatner is a Life Fellow of the American Psychiatric Association, doubly-Board Certified in adult and child and adolescent psychiatry. He is the only psychiatrist in the United States who is also a certified trainer of psychodrama. Recognized with the J.L. Moreno Award for over 30 years of creative contributions to the sub-field of psychodrama, Dr. Blatner is the author of three of the best-known books on the subject as well as numerous articles, chapters, monographs and presentations nationally and internationally.

**NAJP:** Dr. Blatner, what exactly is psychodrama, and how did it originate?

**AB:** Psychodrama is a complex of methods and theories designed at first to be used as a form of group psychotherapy, developed in the late 1930s. Instead of talking about problems, patients are helped to enact those problematic situations, and in the direct dialogue and associated physical energizing, patients often come to powerful insights, emotional catharses, and even discover ways of working through those problems.

**NAJP:** Who was its originator and what are its main tenets?

**AB:** Jacob L. Moreno, M.D., (1889-1974) was a complex man, a psychiatrist who operated a sanitarium in upstate New York, held open sessions in New York City, and wrote and published many books, edited journals, and promoted group psychotherapy as well as psychodrama.

Tenets: Psychodrama introduces several important elements into therapy:

---

*Author info:* Correspondence should be sent to: Dr. Michael Shaughnessy, Psychology Dept., Eastern New Mexico University, Portales, NM 88130.

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 137-146.
© NAJP

* Helps patients to become more creative with life as they cope with their problems. Emphasizing creativity as a value has its own suggestive energizing power.

* Develop creative potentials through promoting activities in which patients can spontaneously interact, improwise, and in so doing, unexpected sources of imagination, intuition, emotion, and thinking are evoked.

* Create a playful context in the sense of having the freedom to maneuver in a relatively fail-safe setting, because spontaneity can only emerge where there is low anxiety.

* Use drama as a natural vehicle for integrating the aforementioned principles along with a variety of devices that integrate imagination, intuition, and physical action.

**NAJP:** What are its strengths and weaknesses?

**AB:** Psychodrama is perhaps the "richest" complex of ideas and techniques among the various schools of therapy, in terms of the numbers of different dimensions of life and experience being integrated. It can be a particularly powerful and evocative method, helping to facilitate growth and insight with clients who tend to be somewhat defensive in ordinary verbal discourse.

Its weaknesses are several: (1) The method itself is not impervious to its being used clumsily, badly, anti-therapeutically. (Perhaps the same could be said for other approaches, also.) (2). I don't see pure psychodrama as being in itself a comprehensive approach to healing, but again, I feel that way about all other recognized types of therapy. I do believe in a more multi-modal and integrative approach that addresses a number of domains of the patient's life.

**NAJP:** Can you give us a case example as to how it is used and employed?

**AB:** Typically, in a group therapy session, a present situation, such as an irrational reaction to something another client says or does, becomes the focus of the group's attention. With the client who has the reaction agreeing to explore this over-reaction, a series of scenes are staged. First, the client who over-reacts, as the main person exploring the scene, the "protagonist," re-enacts the irritating encounter. The protagonist (let's assume it's a man named Joe) moves to the center of the group and with the help of someone else playing Joe's inner unspoken voices, his "double," plays both parts of that interaction. The other person, call her "Mary," in fact will sit to the side at first, so as to reduce her need to be on the defensive. The first task is to bring out what it was that was irritating. The previously unexpressed and possibly pre-conscious feelings of Joe on one hand, and what Joe imagines Mary to have felt or meant by her remarks are both portrayed, first with Joe and his double speaking, and then with Joe, "role reversing," and playing Mary.

As the action enters the mid-game, several directions may be pursued. One is to clarify what Mary actually meant, by staging a second scene: Mary re-enters the scene in a "replay" and offers almost the same remark, only does it in such a way that explains its actual meaning.

Another direction: What was the basis for Joe's assuming Mary's motivation? Often there is a transference going on here, and it makes sense to stage an earlier scene with someone else who made similar remarks, perhaps a teacher, older sibling, or mother. Let's say it reminded Joe of his mother, and then a scene would be staged of a past time in which that kind of remark was made, and with the help of the double, the deeper feelings were brought out.

This description could go on for many pages. Suffice it to say that using techniques such as role reversal, doubling (bringing out the inner voices), replaying the scene, cutting the scene and trying a different approach, and scores of other methods, almost any situation can be approached. Once insight is gained, though, a working-through scene or two is staged in which Joe is helped to recognize, comment on, and react to the real Mary in a more authentic and mature fashion. The point here is that behavioral practice—one of the elements that Lazarus wrote about—was implicit in Moreno's theory of role training as a mode of integrating the insight. Psychodrama, in other words, is not just for catharsis and insight, but also for helping people to develop a more effective repertoire of response patterns.

**NAJP:** Where does one get training? What is involved?

**AB:** There are over a hundred certified trainers in the USA, and hundreds more in other countries. A listing of trainers and practitioners as well as the requirements for certification may be obtained from the American Board of Examiners in Psychodrama, Sociometry and Group Psychotherapy, P.O. Box 15572, Washington, DC 20003-0572 (Telephone: 202-483-0514).

**NAJP:** How does Psychodrama differ, from say, Gestalt therapy and Fritz Perls?

**AB:** Fritz (and Laura) developed a mixture of existential and neo-analytic ideas. After emigrating to the United States from South

Africa, Fritz attended a number of Moreno's "open sessions," from which he acquired the technique of "shuttling," which is really a variation of a combination of the "empty chair" and "role reversal" techniques in psychodrama. Theory in Gestalt also gives greater attention to the present moment, although Moreno also wrote about the power of this category of the "here-and-now" decades earlier. Gestalt has its own elaborated theory and doesn't use other psycho-dramatic techniques.

**NAJP:** What is the main focus of psychodrama? Behavior, emotion, thinking, interpersonal relations?

**AB:** These tools can be focused on any and all of these domains, depending on what the patient needs to experience.

**NAJP:** What is your perspective on drugs and psychotropic medication?

**AB:** As a physician and a psychiatrist, I have great respect for their power and utility. Furthermore, I think there continues to be far too much irrational prejudice and illusory and sentimental attachment to purely psychological explanations for problems among non-medical mental health professionals. Hence, I think there are many people in therapy who really need to have medication become a part of their overall treatment.

On the other hand, I confess to there also being a problem of over-medication and unthinking and shallow prescribing, as well as insufficient diagnosis; this carelessness, in turn, reinforces the anti-psychiatry, anti-medication attitude. There is a discerning middle ground.

**NAJP:** What books would you suggest in terms of reading about psychodrama?

**AB:** My own books offer a good introduction to the method, as well as being extensively referenced. *Acting-In* explains the basics of the approach, while *Foundations of Psychodrama* presents the rationale for its use. These books also include hundreds of current references. Many other books on psychodrama are listed in one of the papers on my website: www.blatner.com/adam/, along with a goodly number of papers both about psychodrama and other aspects of psychotherapy and psychology.

**NAJP:** What are you currently working on? Researching?

**AB:** I'm currently writing about a number of things: (1) How psychodramatic methods may be applied in everyday life. (2) Ways of fostering imaginativeness in the general population. (3) Philosophy and psychology--aspects of their integration.

**NAJP:** Who has influenced you and why?

**AB:** I was influenced by my teachers of psychiatry at Stanford University Medical Center's Department of Psychology, who worked mainly from a basis of neo-Freudian thinking, emphasizing the writings of people like Harry Stack Sullivan, John Bowlby, etc. It was pretty eclectic, though generally grounded in the then dominant worldview of psychoanalysis. The San Francisco Bay Area, the region that included Stanford University, was in the 1960s enjoying an incredible degree of intellectual ferment in many areas. I was exposed to a wide range of (at that time) new therapies--Bioenergetic Analysis, Jung's Analytical Psychology (then in resurgence), LSD research, Family Therapy, Dream Research, Psychosynthesis, Humanistic and Transpersonal Psychology, Transactional Analysis, Gestalt Therapy, the entire panoply of approaches being used in the Human Potential Movement (Esalen was just a hundred miles away), etc. Since then, I have continued to explore a wide range of influences.

**NAJP:** In this age of September 11 and the Washington Sniper, what kinds of mental health problems do you see our children having as they grow up, and later as adults?

**AB:** Kids in general are exposed to many more sources of worry than two generations ago; this is part of the postmodern condition. (I have been a supporter of the movement towards building in programs for developing emotional intelligence and social and emotional learning in the schools). In addition, such classes also allow young people to express their fears and vulnerability without having to just develop a repressed character style; and to develop alternative modes of coping. Furthermore, I see modified psychodrama--in the form of role playing and sociodrama--as the best method for developing skills that require experiential practice for mastery (See my paper on my website on the role of drama in education).

**NAJP:** What is your philosophy regarding counseling and therapy?

**AB:** That's rather extensive. It depends in part on what people want. Many people want some help in coping with a problem, and often short-term therapy does the job, especially if it can be tapered off and the client invited to check back in if more help is needed. (Too often, brief therapy programs don't build in this open-ended option.) A few people not only would benefit from longer-term and "deeper" life exploration, but they can (1) afford it; and (2) would prefer it. Those who practice solution-focused or other brief therapy approaches do their clients a disservice if they don't consider this option and refer their clients to those whose approaches are more oriented to this goal.

On the other hand, those who think of themselves as "depth" psychotherapists do a disservice to their clients by assuming that they want longer-term approaches, when in fact, an unselected number of clients really want more of the brief therapy approach. To be insensitive to this option, to not only know just one approach, but worse, to assume everyone wants that approach, is to do a grave disservice. A modern counselor needs to be able to assess, openly inform their clients, and be able to deal with either type of client.

**NAJP:** Our human relations seem tenuous. People move constantly, divorce and separation are problematic. How can psychodrama help?

**AB:** I find that most people are seriously lacking in a variety of skills in communications, problem solving, and self-awareness. I would like these to be taught in the schools. If they're already in trouble, there are a goodly number of components to the diagnostic and treatment process that need to be addressed, and psychodramatic methods can be used to facilitate most of these components. However, there are also processes that require simple discussion, without action methods, and that must be respected also. I don't advocate psychodrama as the sole method, any more than I as a physician think that every patient needs "medicine."

**NAJP:** It seems, at least to me, that people have more and more emotional needs that are not being met. Any thoughts on that, or am I reading the current zeitgeist incorrectly?

**AB:** The nature of the postmodern condition requires greater emotional flexibility. It is not just needs that aren't being met, but equally that people's desires are being inflamed. (See my paper on my website on the implications of postmodernism for psychotherapy).

**NAJP:** What about those who foster a more behavioristic, objective approach to therapy? What do you have to say to these operant conditioning folk?

**AB:** I think they're wonderful, if they recognize the appropriate indications for their work. I think brain surgery is wonderful also, but that doesn't mean that everyone should have brain surgery. It's a matter of assessing appropriate dynamics, needs, and being able to provide for them. I'm pretty aligned with Lazarus' Multi-Modal approach, only I think it's possible to develop a theoretical eclecticism as well as technical eclecticism.

**NAJP:** In our current society, teachers seem to have taken over more and more of the socializing tasks that parents used to do. Further, teachers seem to be the more consistent adults in the lives of children. What will be the ramifications and repercussions of this?

**AB:** The question seems to hint at its own bias. First, there is a need to continuously educate parents as to new ways to play with, read to, and more constructively discipline their children, and ways to enjoy these roles. Second, there are continuously irrational escalations of demands on teachers that are likely to demoralize rather than empower them, so the power and role of teachers may shift a bit. Third, there continue to be social forces that are subtly diverting, misleading, and addicting, all of which drain energy from the optimal experience of child rearing and education.

**NAJP:** In earlier editions of this journal, we have focused on Arnold Lazarus and Albert Ellis. Could you comment on their approaches to therapy?

**AB:** Both have made great contributions to a field that needs to appreciate their best insights, but also, there are many dimensions of healing that they didn't seem to know about or appreciate. So we need to integrate their work and weave it into a broader way of thinking about therapy and education.

**NAJP:** Medication seems to continually be an issue of concern. Let me put this bluntly. Are our children being over-medicated? Or is some other factor operative? Or is this a response to stress in our society, or a breakdown in values, or what?

**AB:** I think most kids on medicines for hyperactivity will enjoy a healthier overall childhood experience, be scolded significantly less frequently, and have more success socially, as well as scholastically. A small percentage are being pushed to take more medicine than their systems need, due to a lack of sophistication on the part of the prescribing physician--most often, not a child psychiatrist. Another small percentage are mis-diagnosed--their hyperactivity is not "typical"--due to allergies, significant family dysfunction, post-traumatic experiences, dyslexia, hearing or vision problems, etc.

Another growing group of conditions when medicine is being used includes Obsessive-Compulsive Disorder, general anxiety, and depression. For the first two categories, I suspect that there isn't too much over-medication, and kids who used to suffer without help are now getting help. For the third condition, depression, in most cases therapy is more important than medication, and especially family therapy. But there are scores of individual variations, and for some, medication is being over-prescribed or inappropriately prescribed. For others, as I mentioned, the sentimental anti-medication prejudice of non-physician mental health professionals is actively preventing them from getting the treatment that would be most useful.

For kids who are experiencing significant life stresses in families and schools, these must be assessed and corrected, and medicine should not be used as a way to avoid those challenges of diagnosing the whole socio-emotional system.

**NAJP:** (a) How important is the personality of the therapist? Did Carl Rogers do well based on his theory or his personality, or both? (b) To what do you attribute your success?

**AB:** (a) I think the maturity, gentleness, kindness, authenticity, and care of the therapist is very important for most patients' care. Some patients probably could improve even with a more inexperienced and emotionally shallow therapist using a manual; others need someone who can truly empathize and is quite able to cope with and resist projective identification and counter-transference. I think Rogers' theory is extensive, but his effectiveness, such as it was, may have been more due to his personality.

(b) My success is based primarily on the practiced skill of diagnosis, of study, of submitting myself to an ongoing process of therapy, in my marriage and in groups, and of contemplating the kinds of issues raised in these questions.

**NAJP:** What are your most difficult cases and why?

**AB:** Those who are weakest in the areas of voluntariness, psychological-mindedness, ego strength, and socioeconomic resources, rather than any category recognized by the official Diagnostic Manual (These four categories are discussed in greater detail as the "real" diagnostic factors on my website).

**NAJP:** What is your view about all this computerized testing, eg. MMPI, Millon, the 16 PF etc?

**AB:** In my years in clinical work, I've never seen anyone demonstrate to me how they've used any of these tests to guide their treatment.

**NAJP:** What is your view on the Rorschach, the TAT, the Draw a Person, Incomplete Sentences?

**AB:** Similarly, I find these tests to be actually distancing and weakening the treatment alliance, adding a measure of mystification, and deepening the caricature of the therapist as a non-disclosing and technique-dominated "analyst." Most patients come out of such tests wondering, "Why did they ask me that? What did they find?" And rarely are the results interpreted in a way that actually encourages rather than intimidates the patient. An artistic therapist may be able to do this, but I suspect that an equal or greater amount of perhaps even more relevant information would be obtained in the same amount of time and for the same amount of money by an experienced interviewer.

**NAJP:** Recently, more and more colleges and universities are reverting to courses on-line. Would you advocate for psychodrama training on the Internet?

**AB:** Well, only to the extent of, say, having the student read my book, *Acting-In*, as a cognitive orientation. Beyond that, one must be in actual physical presence, in a group, doing experiential practice. Psychodrama must be learned using all sensory and physical modalities, like swimming or doing surgery.

**NAJP:** Psychodrama is a pretty emotional, powerful, cathartic experience. Should we screen people who may not have the emotional and ego strength to deal with the feelings engendered by psychodrama?

**AB:** There is classical psychodrama, and there are the variable uses of psychodramatic methods. I think of psychodrama as a complex of tools, as I said, and these may be likened to the use of electric power tools in carpentry. Using these tools foolishly can be more destructive than using ordinary non-power tools. So the points are the judgment and training of the practitioner, an awareness of the safety precautions, and not to think that it can be learned easily.

**NAJP:** What questions should those who practice psychodrama reflect on, perhaps on a daily basis?

**AB:** Same as all therapists: What else can I learn to develop myself as a person, myself as a professional, my art as a therapist. What might I dare to create, revise, challenge in what I have been taught? What is there from other fields, other disciplines, other approaches that might deepen or broaden my skills. I think the same questions apply for all physicians and people-helpers.

**NAJP:** What question have I neglected to ask?

**AB:** The area of spirituality and psychotherapy could fill another paper. In short, I think it's helpful for therapists to develop their own deeper philosophy and to encourage their clients to explore their problems within a framework of the client's highest values. In turn, I find that exploring one's spiritual journey requires a good deal of what might ordinarily occur in basic psychotherapy.

Finally, I want to remind people that there is so much more to be said about psychodrama and psychotherapy. I've written numerous articles and books. Check with my website, www.blatner.com/adam, for this information, as well as for links to organizations and other sources where interested readers can go for follow-up.

## REFERENCES

Blatner, A. (1996). *Acting In: Practical Applications of Psychodramatic Methods* (3rd ed). NY: Springer Publications.

Blatner, A. (2000). *Foundations of Psychodrama: History, Theory and Practice* (4th ed.). NY: Springer Publishing Co.

# Artistic Creativity: Personality and the Diurnal Rhythm

Leslie J Francis

Michael Fearn

Brenda Brin Booker
*University of Wales, Bangor, UK*

A sample of 157 adult artists completed the *Eysenck Personality Questionnaire* together with a question about the time of day during which they prefer to work. The data demonstrated that there was no relationship between preferred working patterns and either extraversion scores or neuroticism scores. Those scoring high on the psychoticism scale preferred to work later in the day.

Several studies have examined the personality profile of artists within the context of Eysenck's dimensional model of personality (Eysenck & Eysenck, 1985), which argues that individual differences can be most adequately and economically summarised in terms of the three higher order dimensions of extraversion, neuroticism, and psychoticism, including Götz and Götz (1973, 1979a, 1979b), Pearson and Clayden (1982), Pearson (1983), Eysenck and Furnham (1993) and Booker, Fearn, and Francis (2001). According to these studies artists tend to record higher scores than the general population on the dimensions of psychoticism and neuroticism. Artists do not differ, however, from the general population in terms of scores on the dimension of extraversion. Less interest has been shown, however, in examining the power of Eysenck's dimensional model of personality to predict individual differences between artists.

One interesting individual difference between artists concerns their working pattern: whether they work at their best during the morning, the afternoon, the evening, or at night. More generally quite a developed literature exists on the relationships between Eysenck's major dimensions of personality and the diurnal rhythm or the circadian activity cycle, including Eysenck and Folkard (1980), Humphreys, Revelle, Simon, and Gilliland (1980), Revelle, Humphreys, Simon, and Gilliland (1980), Larsen (1985), Mecacci, Zani, Rocchetti, and Lucioli (1986), Mura and Levy (1986),

---

*Author info*: Correspondence should be sent to: Leslie J Francis, Welsh National Centre for Religious Education, U. of Wales, Bangor, Normal Site, Bangor LL57 2PX UK l.j.francis@bangor.ac.uk

*North American Journal of Psychology*, 2003, Vol. 5, No. 1, 147-152.

© NAJP

Matthews (1987), Zuber and Ekehammar (1988), Neubauer (1992), Adan (1992), Mitchell and Redman (1993) and Mecacci and Rocchetti (1998).

While evidence from these studies is far from unanimous, the main clue to emerge is that impulsivity is the key personality factor to predict the preferred time of day (Anderson & Revelle, 1982, 1994), although even here the evidence is not conclusive. Some studies have failed to find a significant relationship between impulsivity and the diurnal rhythm (Lawrence & Stanford, 1999). In respect of Eysenck's dimensional model of personality, the location of impulsivity within personality has itself been somewhat problematic. In the early *Eysenck Personality Inventory* (Eysenck & Eysenck, 1964) impulsivity was associated with extraversion. In this model, those scoring low on extraversion were likely to be at their best in the morning. In the more recent *Eysenck Personality Questionnaire* (Eysenck & Eysenck, 1975) and the *Revised Eysenck Personality Questionnaire* (Eysenck & Eysenck, 1991), impulsivity was associated with psychoticism. In this model, those scoring low on psychoticism were likely to be at their best in the morning. A few studies, however, have also reported significant correlations between the diurnal rhythm and Eysenck's more recent conceptualisation of extraversion, including a relationship between extraversion and "eveningness" (Larsen, 1985; Adan, 1992; Mitchell & Redman, 1993) and the neuroticism scale, indicating a relationship between neuroticism and eveningness (Mura & Levy, 1986; Neubauer, 1992; Mecacci & Rocchetti, 1998).

Against this background, the aim of the present study is to examine the relationship between Eysenck's dimensional model of personality and the time of day when artists report that they work at their best. If artistic creativity is associated with the general diurnal rhythm, it is hypothesised that psychoticism scores will distinguish most clearly between those who work best early in the day and those who work best late in the day.

## METHOD

### Sample

A total of 94 female and 63 male artists concerned with painting and drawing participated in the project. The sample included 38 respondents under the age of thirty, 32 in their thirties, 38 in their forties, 25 in their fifties, 13 in their sixties, and 11 in their seventies or over. Participants were contacted through the retail suppliers of art materials.

### Instrument

Personality was measured by the *Eysenck Personality Questionnaire* (Eysenck & Eysenck, 1975). This instrument proposes a 21-item scale of extraversion, a 23-item scale of neuroticism, a 25-item scale of psychoticism, and a 21-item lie scale. Each item is assessed on a dichotomous scale: *yes, no*. The preferred time of day was established by the question, 'During which part of the day do you work best?' The four responses were defined as: morning, afternoon, evening, and night time.

## RESULTS

Of the total sample of 157 artists, 71 preferred to work in the morning, 41 in the afternoon, 23 during the evening, and 20 at night. The remaining two artists left the question unanswered. Table 1 displays the mean scale scores of extraversion, neuroticism, psychoticism, and the lie scale for the four groups of artists separately, together with oneway ANOVA tests of statistical significance and tests of deviation from linearity.

TABLE 1 Personality and Preferred Working Patterns

| P | Morning | | Afternoon | | Evening | | Night | | Bet.groups | | dev linear | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mean | sd | mean | sd | mean | sd | mean | sd | F | P< | F | P< |
| E | 11.6 | 4.3 | 12.4 | 4.8 | 14.4 | 3.8 | 12.5 | 5.5 | 2.2 | NS | 1.8 | NS |
| N | 12.8 | 5.2 | 12.5 | 5.1 | 13.8 | 4.6 | 12.2 | 5.1 | 0.4 | NS | 0.6 | NS |
| Ps | 3.3 | 3.8 | 3.6 | 3.6 | 4.2 | 2.7 | 5.8 | 3.6 | 2.7 | .05 | 0.5 | NS |
| L | 8.6 | 3.7 | 9.3 | 3.7 | 7.0 | 3.3 | 6.0 | 3.5 | 4.7 | .01 | 2.7 | NS |

P = personality; E = extraversion; N = neuroticism; Ps = psychoticism; L = lie scale

The data demonstrate that there is no significant relationship between preferred working patterns and either extraversion scores or neuroticism scores. There is, however, a significant relationship between preferred working patterns and psychoticism scores in the predicted direction. The data also demonstrate a significant relationship between working patterns and lie scale scores. None of the relationships depart significantly from linearity.

## DISCUSSION

Three main conclusions emerge from the study. First, it is clear that neither extraversion scores nor neuroticism scores are significant predictors of the time of day when individual artists work at their best. This is consistent with general conclusions of research concerned with the relationship into the diurnal rhythm, although there are some studies which implicate extraversion (Adan, 1992; Larsen, 1985; Mitchell & Redman,

1993) or neuroticism (Mara & Levy, 1986; Mecacci & Rocchetti, 1998; Neubauer, 1992) in the diurnal rhythm.

Second, psychoticism scores emerge as a significant predictor of the time of day when individual artists work at their best. Psychoticism scores increase in step with the time of day during which artists work best. The lowest psychoticism scores are associated with a preference for working in the morning, while the highest psychoticism scores are associated with a preference for working at night. This is consistent with the general consensus which emerges from the research concerned with the diurnal rhythm which identifies impulsivity as the key personality factor implicated in the preferred time of day, and with the contention of Eysenck and Eysenck (1976) that impulsivity is a key component of psychoticism.

Third, lie scale scores emerge as a second significant predictor of time of day when individual artists work at their best. This finding is difficult to locate within the wider research concerned with personality and the diurnal rhythm since many of the previous studies have simply failed to report the findings on this scale. Moreover, interpretation of the findings is made problematic by a fundamental lack of consensus regarding what it is that the Eysenckian lie scales actually measure (Pearson & Francis, 1989). If, however, it is assumed that lie scales measure social conformity (Eysenck, 1999; Lewis, 2000), the data suggest that artists who tend to prefer social conformity also feel that they are at their best during the morning or the afternoon. This finding makes sense because it has been shown that there is a social stigma attached to being a nocturnal person (McCutcheon, 1998). Artists who are less concerned with social conformity, however, feel that they work their best during the evening or at night. These intriguing findings are worth testing among further samples of artists and art students.

---

NOTE: This study was designed and executed by Brenda Brin Booker, but sadly not completed until after her death in April 2001. The completed study is dedicated to her memory.

## REFERENCES

Adan, A. (1992). The influence of age, work schedule and personality on morningness dimension. *International Journal of Psychophysiology*, *12*, 95-99.

Anderson, K.J., & Revelle, W. (1982). Impulsivity, caffeine and proofreading: A test of the Easterbrook hypothesis. *Journal of Experimental Psychology: human perception and performance*, *8*, 614-624.

Anderson, K.J., & Revelle, W. (1994). Impulsivity and time of day: Is rate of change in arousal a function of impulsivity? *Journal of Personality and Social Psychology*, *67*, 334-344.

Booker, B.B., Fearn, M., & Francis, L.J. (2001). The personality profile of artists. (in press).

Eysenck, H.J., & Eysenck, M.W. (1985). *Personality and individual differences: A natural science approach*. New York: Plenum Press.

Eysenck, H.J., & Eysenck, S.B.G. (1964). *Manual of the Eysenck Personality Inventory*. London: Hodder and Stoughton.

Eysenck, H.J., & Eysenck, S.B.G. (1975). *Manual of the Eysenck Personality Questionnaire*. London: Hodder and Stoughton.

Eysenck, H.J., & Eysenck, S.B.G. (1976). *Psychoticism as a dimension of personality*. London: Hodder and Stoughton.

Eysenck, H.J., & Eysenck, S.B.G. (1991). *Eysenck Personality Scales (EPS Adult)*. London: Hodder and Stoughton.

Eysenck, M.W. (1999). A response to Christopher Alan Lewis (1999), 'Is the relationship between religiosity and personality 'contaminated' by social desirability as assessed by the lie scale?' *Mental Health, Religion and Culture, 2*, 115-116.

Eysenck, M.W., & Folkard, S. (1980). Personality, time of day and caffeine: Some theoretical and conceptual problems with Revelle et al. *Journal of Experimental Psychology: General, 109*, 32-41.

Eysenck, H.J., & Furnham, A. (1993). Personality and the *Barron-Welsh* art scale. *Perceptual and Motor Skills, 76*, 837-838.

Götz, K.O., & Götz, K. (1973). Introversion-extraversion and neuroticism in gifted and ungifted art students. *Perceptual and Motor Skills, 36*, 675-678.

Götz, K.O., & Götz, K. (1979a). Personality characteristics of professional artists. *Perceptual and Motor Skills, 49*, 327-334.

Götz, K.O., & Götz, K. (1979b). Personality characteristics of successful artists. *Perceptual and Motor Skills, 49*, 9191-924.

Humphreys, M.S., Revelle, W., Simon, L., & Gilliland, K. (1980). Individual differences in diurnal rhythms and multiple activation states: A reply to M.W. Eysenck and Folkard. *Journal of Experimental Psychology: General, 109*, 42-48.

Larsen, R.J. (1985). Individual differences in circadian activity rhythm and personality. *Personality and Individual Differences, 6*, 305-311.

Lawrence, J.B., & Stanford, M.S. (1999). Impulsivity and time of day: effects on performance and cognitive tempo. *Personality and Individual Differences, 26*, 199-207.

Lewis, C.A. (2000). The religiosity-psychoticism relationship and the two factors of social desirability: A response to Michael W. Eysenck (1999). *Mental Health, Religion and Culture, 3*, 39-45.

Matthews, G. (1987). Personality and multidimensional arousal: A study of two dimensions of extraversion. *Personality and Individual Differences, 8*, 9-16.

McCutcheon, L. E. (1998). Stereotyping the nocturnal person: Findings with some alarming implications. *Journal of Social Psychology, 138*, 411-413.

Mecacci, L., & Rocchetti, G. (1998). Morning and evening types: Stress-related personality aspects. *Personality and Individual Differences, 25*, 537-542.

Mecacci, L., Zani, A., Rochetti, G., & Lucioli, R. (1986). The relationship between morningness-eveningness, ageing and personality. *Personality and Individual Differences*, *7*, 911-913.

Mitchell, P.J., & Redman, J.R. (1993). The relationship between morningness-eveningness, personality and habitual caffeine consumption. *Personality and Individual Differences*, *15*, 105-108.

Mura, E.L., & Levy, D.A. (1986). Relationship between neuroticism and circadian rhythms. *Psychological Reports*, *58*, 298.

Neubauer, A.C. (1992). Psychometric comparison of two circadian rhythm questionnaires and their relationship with personality. *Personality and Individual Differences*, *13*, 125-131.

Pearson, P.R. (1983). Personality characteristics of cartoonists. *Personality and Individual Differences*, *4*, 227-228.

Pearson, P.R., & Clayden, T. (1982). Psychoticism scores in graphic design students. *Personality and Individual Differences*, *3*, 83-84.

Pearson, P.R., & Francis, L.J. (1989). The dual nature of Eysenckian lie scales: Are religious adolescents more truthful? *Personality and Individual Differences*, *10*, 1041-1048.

Revelle, W., Humphreys, M.S., Simon, L., & Gilliland, K. (1980). The interactive effect of personality, time of day and caffeine: A test of the arousal model. *Journal of Experimental Psychology: General*, [illegible]

Wilson, G.D. (1990). Personality, time of day and arousal. *Personality and Individual Differences*, *11*, 153-168.

Zuber, I., & Ekehammar, B. (1988). Personality, time of day and visual perception: Preferences and selective attention. *Personality and Individual Differences*, *9*, 345-352.

# How to Submit Papers to *NAJP*

The submission of good papers is very important to any psychology journal. We hope that you will support our views about what a psychology journal should be like by submitting papers now. We will try to mail a decision on your paper within 5 weeks of receipt by us. We will publish your paper in an average of 5 months of receipt of a final accepted version.

Submit 1 paper copy of each manuscript prepared according to APA guidelines. Also include a diskette with your manuscript or (preferably) e-mail the file to NAJP@mpinet.net. Include 2 large stamped envelopes so we can send your manuscript out for review. We encourage you to have your paper read by peers before submission.

If the final paper is accepted, please send a check or purchase order for the amount specified with your final draft (billed at $25 dollars per typeset page in units of two pages).

Submission of a manuscript to the Journal is a contract to publish with the Journal if the paper is accepted. Because of our rapid editorial feedback, simultaneous submission to other journals is not allowed. We will offer brief comments on the suitability of a topic for publication in *NAJP* before a submission.

Send all correspondence to: *North American* Journal of Psychology, 240 Harbor Dr., Winter Garden, FL 34787, phone 407-877-8364.

---

## SUBSCRIPTIONS

All subscriptions are on a calendar year basis only. If you order late in the year, the earlier issues will be sent to you. Institutional rate, $65. Individual rates, paid by check, $30. Add $7 for Canadian subscriptions. Add $8 for subscriptions outside North America. Phone orders accepted with Visa, MasterCard or American Express. Call 407-877-8364. The *North American* Journal of Psychology is now published in March, June & December.

Visa ☐ AMEX ☐ MC ☐

Card # Exp. Date

Name

Address

City State Zip

# A Summary of Our Philosophy

The ***North American* Journal of Psychology** publishes scientific papers that are of general interest to psychologists and other social scientists. Papers may encompass a wide variety of topics, methods, and strategies. It is our belief that many good scientific papers are rejected for invalid reasons. Some journals reject up to 90% of their submissions because they don't have space. Furthermore, studies of the review process strongly suggest that not all of the lucky 10% are better papers than those that get rejected. In our view many of those rejected papers are meritorious with need for only minor revisions. Perhaps our philosophy can be summed up this way: we are looking for ways to strengthen good papers rather than searching for weak excuses to reject them.

*North American*

# Journal of Psychology

Vol. 5, No. 2 2003

## Advisory Editorial Board

ADRIAN FURNHAM
Psychology
University College London

DOUGLAS JACKSON
Psychology
University of Western Ontario

JAMES M. JONES
Psychology
University of Delaware

HEIDI KELLER
Psychology
University of Osnabrueck

MANUEL LONDON
Psychology
SUNY, Stony Brook

KAREN LYNESS
Management
Baruch College, CUNY

ROBERT PASNAK
Psychology
George Mason University

RICHARD RYAN
Psychology
University of Rochester

PHILIP ZIMBARDO
Psychology
Stanford University

**Editor**
LYNN E. McCUTCHEON

## How to Subscribe to The *North American* Journal of Psychology

All subscriptions are on a calendar year basis only. If you order late in the year, the earlier issue will be sent to you. Institutional rate: $65. Individual rate: $30. Add $7 for Canadian subscriptions. Add $8 for subscriptions outside North America. *North American* Journal of Psychology is published in March, June and December.

**Now visit our website at http://najp.8m.com**

# North American Journal of Psychology

June, 2003 ISSN 1527-7143 Vol. 5, No.2

**Birth Order, Age at Menarche, and Intergenerational Context Continuity: A Comparison of Female Somatic Development in West and East Germany** 153
*Athanasios Chasiotis, Heidi Keller, & David Scheffer*

**Psychology Poster Presentations: Analysis of Characteristics and Recommendations for Improvement** 171
*David P. Nalbone & Christopher L. Aberson*

**Effects of Odorant Administration on Objective and Subjective Measures of Sleep Quality, Post-sleep Mood and Alertness, and Cognitive Performance** 181
*Bryan Raudenbush, Jerrod Koon, Jeffrey Smith, & Phillip Zoladz*

**Unrealistic Optimism and School Violence Prevention Programs** 193
*John Chapin & Grace Coleman*

**Applications of Behavioral Methods as Treatment for Urinary Incontinence in the Elderly** 203
*Mark R. Dixon, Jamie Dennis, Kimberly M. Zlomke, & Christine Halvey*

**Interview with Donald Meichenbaum** 213
*Michael F. Shaughnessy & Marilyn Haight*

**A Comparison of Communication Apprehension Scores Between Americans and Argentinians** 223
*Victoria Sarquisse, Jeff Butler, & Burt Pryor*

**Motivational Interviewing and Fluoxetine for Pathological Gambling Disorder: A Single Case Study** 229
*Jeffrey G. Kuentzel, Melinda J. Henderson, Joseph J. Zambo, Susan M. Stine, & Charles R. Schuster*

**Examining the Relationship Between Need for Cognition and the Muller-Lyer Illusion** 249
*Christopher Koch & Elissa S. Hayworth*

**Analysis of Career Information in Introductory Psychology Textbooks: Methods and Findings** 257
*Shawna L. Anderson, William J. A. Eiler, II, & D. W. Rajecki*

**The Aggressive Driving Behavior Scale: Developing a Self-report Measure of Unsafe Driving Practices** 269
*John M. Houston, Paul B. Harris, & Marcia Norman*

**Psychological Needs and Response Bias: An Examination of Paulhus and John's Reformulation** 279
*Bryce F. Sullivan & Donald J. Scandell*

**The Resolution of Cognitive Conflict Arising from Career Choice Decisions Faced by Young Persons** 289
*Emil A. Geraskov*

**School Integration and the Achievement Test Scores of Black and White Students in Savannah, Georgia** 301
*Stephen A. Taylor & Katherine C. Harris*

**Emotive Writing Moderates the Relationship Between Mood Awareness and Athletic Performance in Collegiate Tennis Players** 311
*Vann B. Scott Jr., Renee D. Robare, David B. Raines, Sarah J. Konwinski, Julie A. Chanin & Rachel Tolley*

## Editor's Comments

Thanks again to the reviewers. all of whom did a fine job of critiquing papers promptly and with great insight. Without a doubt our reviewers have made this journal what it is today. In previous issues. I recognized three reviewers by name who have done a fine job of reviewing two or more papers for NAJP. For this issue a tip of the editor's cap goes to three more reviewers. specifically Ruth Anne Rehfeldt. John Maltby, and Ann Zak. Among other things, Dr.Rehfeldt has done much to advance the cause of applied operant conditioning theory. Dr. Maltby has been a tremendously prolific researcher with a specialty in personality scales. Dr. Zak has several publications in the area of social psychology, especially intimate relationships.

I am sure readers will enjoy the humorous remarks made by Donald Meichenbaum in the interview done on behalf of NAJP by Michael Shaughnessy and Marilyn Haight. There are also fascinating articles on sport psychology by Vann Scott and his group, the impact of school integration (see Taylor & Harris). and birth order and adolescent devlopment (see Chasiotis, Keller & Scheffer), to mention just a few.

NAJP is now listed in a large number of influential databases and periodicals directories, and we are always looking for ways to increase our exposure for all authors who get their work published in NAJP.

Lynn E. McCutcheon, editor

# Birth order, Age at Menarche, and Intergenerational Context Continuity: A Comparison of Female Somatic Development in West and East Germany

Athanasios Chasiotis[a], Heidi Keller[a] & David Scheffer[b]
[a] *University of Osnabrueck*
[b] *University of the Federal Army, Hamburg*

The significance of birth order for individual somatic development is examined by comparing two samples of female family members from Osnabrueck in West Germany (N = 113) and Halle in East Germany (N = 96). Results show that the age at menarche is not dependent on regional differences between East and West Germany (as we assumed in a study of a subsample, see Chasiotis et al., 1998), but rather caused by intergenerational differences between daughters and their mothers. Further analyses reveal that the age at menarche is affected by birth order, since only the somatic development of females without younger siblings is dependent on childhood context variables. Implications are discussed within the framework of evolutionary developmental psychology.

Applying an evolutionary framework on developmental psychology, we argue that the behavior of adults can be seen as a result of an evolved developmental pathway (Chasiotis & Keller, 1994; Keller, 1997; Keller & Greenfield, 2000). If the socialized adult constitutes a developmental result, the individual childhood context becomes important for understanding adult minds and behavior. Birth order as one influential (Lamb & Sutton-Smith, 1982; Sulloway, 1996; Toman, 1971) but nonetheless controversial (Ernst & Angst, 1983) childhood context variable is considered here. The aim of this study is to specify somatic developmental paths in West and East Germany with respect to the effects of birth order. This investigation is partly based on a data reanalysis from a previously published study (Chasiotis, Scheffer, Keller & Restemeier, 1998).

## Birth order

The new evolutionary framework and the methodological advantages of Sulloway's (1996) studies and metaanalyses led to a renaissance of

---

*Author info:* Correspondence should be sent to: Dr. Athanasios Chasiotis, Human Sciences Dept., University of Osnabrueck, Seminarstr. 20, D-49069 Osnabruck, Germany. E-mail: Athanasios.Chasiotis@uos.de.

*North American Journal of Psychology,* 2003, Vol. 5, No. 2, 153-170.

© NAJP

research in birth order effects in evolutionary psychology (Davis, 1997; Salmon & Daly, 1998). The first methodological advantage is the consideration not only of birth order main effects but also of interactive effects of birth order with gender and socioeconomic status (Trivers & Willard, 1973; Voland, Dunbar, Engel & Stephan, 1997). The second advantage is the consideration of the *functional* (and not biological) birth order, which is defined by an interbirth interval not exceeding six years (Sulloway, 1996). The first six years of childhood are considered as psychologically the most important ("functional") for individual development (Jaffe, 1991; Lamb & Sutton-Smith, 1982). Siblings born after that interval of six years are not supposed to influence the older siblings or to be influenced by them. Incorporating these methodological advantages into the evolutionary framework proposed by Sulloway (1996; 2001) can make a significant contribution to explain the disparate effects of birth order. Hamilton (1964) recognized that natural selection acts to maximize inclusive fitness, which includes personal reproductive success (direct fitness) and the reproductive success of genetic relatives (indirect fitness). As Robert Trivers' theory on parent-offspring conflict (1974) implies, competition for parental investment is the main cause for sibling rivalry, since from a Darwinian point of view, sibling competition and parent-offspring conflict represent flip sides of the same coin. Because human siblings share only half of each other's genes, they are expected to compete for scarce resources, whenever the benefits of doing so are greater than twice the costs.

This evolutionary perspective fits the empirical evidence in the psychological literature. Every child is reared in a unique environment whose interactive impact is not arbitrary but can be affected by individual and childhood context variables like age, gender, sibship size and specific birth order position. The parental treatment a child receives can differ according to his ordinal position within the family and relates to the child's subsequent behavioral characteristics (Dunn & Kendrick, 1982a, b; Keller & Zach, 2002; Lamb & Sutton-Smith, 1982; Toman, 1971). Evidence for the effect of ordinal position also comes from long-term studies in developmental psychology, in which the interactions of mothers with their first-born infants were later compared with their interactions with their second-born children at the same age (Jacobs & Moss, 1976; Moore, Cohn & Campbell, 1997). As Sulloway (1996) demonstrates empirically, the Darwinian scenario around the ordinal position explains a huge array of phenomena ranging from scientific discoveries and political revolutions to differences in personality traits. The clearest differences appear between first- and laterborns, while only children form an exception and cannot be categorized as clearly (Chasiotis, 1999; Sulloway, 1996). While a first born child experiences the period of only child until a younger sibling is born. a later born child does not experience such a period. Since parents can interact exclusively with firstborns. they are often in a privileged position and have a higher status within the family than laterborns. A first-born child tends to act as a surrogate parent and is more conscientious than a laterborn. whereas a laterborn is more agreeable. fun-loving. and open to experience. A middleborn child also tends to have a mixture of first- and lastborn characteristics but is rather categorized to the group of later-borns (Sulloway. 1996: 2001).

## Evolutionary theory of socialization

The individual childhood context is not only determined by birth order. but resource availability in childhood also explains an important amount of *inter*familial variance. Evolutionary psychology offers a theoretical framework to conceptualize the adaptive impact of the socioeconomic context of the family on consequent somatic development (Belsky, Steinberg & Draper. 1991: Chisholm. 1993. 1996. 1999). Belsky et al. (1991) have proposed two developmental trajectories as consequences of the resource situation of the parents and the associated child rearing pattern. Type 1 describes an impoverished background with an indifferent or even hostile emotional climate within the family and low parental investment. Type 2 refers to affluent circumstances. with a positive. benevolent emotional climate and high parental investment. Their assumption is that psychosocial contextual stressors like inadequate resources or unstable employment will lead to marital discord and will foster insensitive parental behavior. which in turn will induce behavioral problems in the child. The theory culminates in the critical prediction that these aversive childhood experiences accelerate sexual maturation.

In the anthropological literature. ecological stress like war or famine is often associated with a delay of sexual maturation since for example inadequate nutrition makes inhibition of sexual development adaptive (Tanner. 1978). These ecological stressors can be conceptualized as directly affecting the developing individual through starvation or illnesses. Psychosocial factors represent more indirect parameters of the socioecological context. like the influence of age-specific mortality rates on the families' stability by increasing intrafamilial stress (Chisholm. 1993. 1996, 1999). If ecological conditions are largely held constant. as it is the case with the majority of citizens of contemporary industrialized countries. the evolutionary theory of socialization assumes that psychosocial stress accelerates maturation. The onset and timing of puberty are consequently associated with different reproductive careers. Type 1 should tend to a more quantitative reproductive style with early age at menarche. early first childbirth. many offspring, low birth spacing, and low parental investment. Type 2 individuals mature later, start reproductive life later, have fewer offspring and place more parental investment. These developmental pathways also constitute intergenerational links, unless environmental circumstances change (Chasiotis, 1999; Keller, 1997).

In a research project aimed at comparing the impact of the social changes which occured after the Reunification of Germany in 1989 on family development, we recruited two samples of family members from Osnabrueck in West Germany, and Halle in East Germany (Chasiotis & Scheffer, 1998). In that project, we took advantage of the large-scale natural experiment (Noack, Hofer, Kracke and Klein-Allermann, 1995) provided by the division of Germany for four decades by comparing two similar urban areas in East (Halle) and West Germany (Osnabrueck) which mainly differ in the sociopolitical context in the period from 1949-1989. Since the founding of the two opposing ideological sytems in 1949, West Germany, aided by the Marshall Plan produced a prospering economy while Eastern Germany had to pay reparations to the Soviet Union. In addition, the Reunification of Germany in 1989/1990 obviously had a much more disturbing impact on social and family development in the eastern part (new federal states) than in the western part (old federal states) of Germany (Noack et al., 1995).

In that project, we were able to confirm the importance of birth order and its interaction with socioeconomic status in childhood by predicting somatic as well as psychological developmental outcomes (Chasiotis, 1999). By comparing samples from Osnabrueck (West Germany) and Halle (East Germany), we found that the most important predictor for differences in personality styles was not the dichotomic variable "region" or "culture" (East – West), but socioeconomic status in childhood, measured by social status of the father (Chasiotis & Scheffer, 1998). Furthermore, in a sample of 101 female subjects from Osnabrueck, the first-born daughter's age at menarche was significantly later than the other birth orders' age at menarche (see also Jones, Leeton, McLeod & Wood, 1972). Additionally, in line with the Trivers/Willard hypothesis (1973), the age of firstborn daughters of the upper class at first childbirth was six years later than that of the other women (Chasiotis, 1999).

In a previous study, we used the subsample of all mother-daughter dyads from West and East Germany to test the assumption that the onset of puberty is a context-sensitive marker of a reproductive strategy by comparing female parental and filial childhood context and somatic development in both regions (Chasiotis, Scheffer, Keller & Restemeier, 1998). Thus, we tested the effect of two different conditions of childhood context continuity on daughter's age at menarche with the maternal age at menarche controlled. Linear regression models showed that the mother's age at menarche only predicted the daughter's age at menarche if the childhood contexts of the mother's and daughter's generations were similar, which was only the case in the West German sample. In East Germany, the mother's age at menarche had no significant effect, and the variance of daughter's age at menarche was explained by filial childhood context variables alone. The comparison of the two samples of mother-daughter dyads in Eastern and Western Germany demonstrated the context-sensitivity of somatic development, and also showed that this context-sensitivity follows the evolutionary rationale proposed by the evolutionary theory of socialization: what seems to be inherited is not the timing of puberty per se, but the sensitivity for the prepubertal childhood context.

In conclusion, considering birth order and the evolutionary theory of socialization, variation in developmental pathways could be intrafamilial as well. In that line of reasoning, firstborns will show a more qualitative reproductive style, and laterborns a more quantitative reproductive style. The results of our previous study (Chasiotis et al., 1998) indicated intergenerational differences in the somatic development between mothers and daughters in East Germany and intergenerational similarities in the West German mother-daughter dyads. Such differences between East and West Germany can be interpreted as being caused by differences in intergenerational context continuity. Yet, our consideration of social status and birth order in other subsamples of the same research project (Chasiotis, 1999; Chasiotis & Scheffer, 1998) led to the assumption that these childhood context variables could also determine the East-West differences in intergenerational context continuity.

We therefore reanalyse our data with respect to the significance of childhood context variables for individual somatic and reproductive development by comparing the complete samples of female family members from Osnabrueck (West Germany) and Halle (East Germany). Our focus is on the impact of birth order on the onset of puberty in females. We restrict ourselves in this study to females, since the age at menarche represents a developmental marker which is easier to detect and to remember than male somatic markers (Brooks - Gunn, J., Warren, M., Rosso, J. and Gargiulo, J., 1987; Moore and Rosenthal, 1993; Zabin and Hayward, 1993). The question to examine is: What is the cause of possible cross-sample differences between East and West German female family members in the timing of puberty? Are these cross-sample differences due to birth order differences or rather to differences in other ("cultural") context variables?

## METHOD

### Participants

From March 1996 to June 1997, two samples of family members were assessed in Osnabrueck in West Germany (*N* = 208 from 86 families) and Halle in East Germany (*N* = 150 from 69 families). As intended from the design of the study, samples can be regarded as socially quite heterogenous (see Table 1 and Chasiotis & Scheffer, 1998 for more details in sample characteristics).

TABLE 1 Sample Characteristics Net-income (in Deutsche Mark (DM) and Education (%)

| | West (Osnabrueck) | East (Halle) |
|---|---|---|
| Net-income (DM) | | |
| mean: 3578 | 3797 | 3287 |
| missing | 16.9 | 14.0 |
| < 1000 | 4.3 | 7.0 |
| 1000 - 1999 | 14.2 | 8.2 |
| 2000 - 2999 | 13.5 | 23.4 |
| 3000 -3999 | 15.9 | 16.0 |
| 4000 - 4999 | 14.0 | 19.4 |
| 5000 - 5999 | 8.2 | 6.7 |
| > 6000 | 13.0 | 6.0 |
| Highest educational level: | | |
| missing | 4.3 | 8.7 |
| no education | 2.4 | 0.0 |
| primary school | 10.3 | 2.7 |
| high school | 47.8 | 53.3 |
| College | 19.3 | 17.3 |
| University | 15.9 | 18.0 |

Within these samples, there were 209 female subjects (96 female subjects from 59 families in East Germany and 113 female subjects from 65 families in West Germany) with a mean age of 42.2 years (*SD* = 15.86, range from 17 to 82 years).

### Measures

A questionnaire of reproductive strategies based on the assumptions of Belsky et al. (1991) was constructed to record contextual variables in childhood, behavioral problems in childhood, onset of puberty, onset of sexual behavior and subsequent onset of reproductive behavior. The construction of the scales included cross-cultural validations with 756 subjects from Germany, Greece, and Great Britain (Chasiotis, 1999), retest-reliability tests from three up to 34 months (Chasiotis. Restemeier. Riemenschneider. Zach and Keller. 1995). external validation of the retrospective scales in a longitudinal sample (Chasiotis. Keller and Restemeier. 1992; Chasiotis. Riemenschneider. Restemeier et al. 1997) and internal validations with the "adult attachment interview" (Chasiotis. 1999; Chasiotis et al., 1995; Scheffer. Chasiotis. Restemeier. Keller & Schölmerich. 2000). For the purpose of this study. the following contextual childhood variables are considered:

1. Resource availability in childhood (3 items. 6 point scale from 0 = very bad. to 6 = very good. Alpha = .74). e.g.: How was the estimation of the financial situation of our parents during your first eight years of life?

2. Family climate in childhood (24 items. 4 point scale from 0 = not at all to 4. very accurate,. Alpha = .92). e. g.: How accurate do the following terms describe the marriage of your parents during your first eight years of life? (followed by terms like love. happiness. understanding,. cf. Scheffer et al., 2000)

3. Behavioral problems in childhood (3a: Internalizing behavioral problems: shyness. anxiety, and socializing problems. 4 point scale from 0 = not at all. to 4 = very strong. Alpha = .82). (3b: Externalizing behavioral problems: aggressiveness. and temper tantrums. 4 point scale from 0 = not at all. to 4 = very strong. Alpha = .71): To which degree did you have the following problems as a prepubertal child?

4. Critical life events: Thinking back on your childhood. which of the following events did occur and had an impact on your life? Divorce or separation of the parents; Unemployment of one parent: Birth or adoption of a sibling; Loss of a relative or friend. If a critical life event occurred. every type of these events was coded on a four point scale from 0 = not at all. to 4 = very strong. Since the critical life events are very heterogenous. they were not summed up in a scale but were treated separately.

5. Measures of somatic development: In one of our validation studies of the questionnaire we tested the reliability of the female somatic marker age at menarche. by retests after 3. 18 and 30 months. These retests revealed no significant differences between the retrospective recalls. As we could show with longitudinal data. these stable childhood memories were also sufficiently valid (see Chasiotis. 1999; Chasiotis et al., 1995). In addition. we studied at least two generations of one family in our lab or in our home visits. Therefore. when individuals were unsure about the onsets of their somatic development they could ask older family members (parents).

Sociobiographic variables: The sociobiographic variables birth order and occupation were obtained by asking each family member about his/her profession, date and place of birth of him-/herself and all of his/her relatives of the last two generations (for further details see Chasiotis, 1999).

Birth order: The coding of birth order resulted in a variable with four categories: only child, firstborn, middle born, and lastborn (cf. Lamb & Sutton-Smith, 1982; Wagner, Schubert & Schubert, 1979). The coding was done by considering the interbirth interval of six years in each subject. In our samples, this functional and not biological definition of the birth orders led to a redefinition of the birth ordering in approximately 10% of the subjects (Chasiotis, 1999; Chasiotis & Scheffer, 1998).

Socioeconomic status in childhood: In addition to the scale, Resource availability in childhood, socioeconomic status in childhood was measured by father's occupation which is "*the best discriminating single indicator of social status*" (Kleining & Moore, 1968, p. 511, translated by the authors) and coded according to the social ranking method of Kleining and Moore (1968). The resulting three-level factor shows a highly significant effect on the scale "resource availability in childhood" which can be interpreted as a theoretical and methodical validation of that scale (Chasiotis, 1999; Chasiotis & Scheffer, 1998).

For computation, we used SPSS+ routines: *T*-tests were performed to test group differences. Chi-square tests were conducted to test distributional differences. Furthermore, partial correlations and linear regression analysis were applied.

## RESULTS

Since detailed analyses of the West German sample revealed that female somatic and reproductive development are also influenced by birth order and socioeconomic status (Chasiotis, 1999), we reanalyzed the data in the West and East Germany subsample of mother-daughter dyads. We wanted to test whether the differences concerning context continuity between the East and West German samples of mother-daughter dyads are the result of cultural differences. We first tested if there are differences in the birth order distributions in the West and East German subsamples of mother-daughter dyads. In Chasiotis et al. (1998) we found intragenerational similarities between the East and West German mothers and intragenerational differences between the East and West German daughters. This pattern is reflected in the birth order distributions of both samples (see Table 2).

On the one hand, the mother generations in East and West Germany do not differ significantly from each other concerning birth order. On the other hand, more than half of the West German daughters are firstborns, while most East German daughters are lastborns. Since the comparisons of West and East German mother-daughter dyads in our previous study

(Chasiotis et al., 1998) might be influenced by the overrepresentation of firstborn daughters in the West German sample and lastborn daughters in the East German sample, we now compare these results by grouping mothers with firstborn daughters and mothers with lastborn daughters (see table 3).

TABLE 2 Intragenerational Birth Order Distribution in West and East Germany (%)

| | Single children | First Born | Middle born | Lastborn | Birth order by Region Chi-Square Test |
|---|---|---|---|---|---|
| Mothers West (*N* = 35) | 6 (17.1) | 10 (28.5) | 12 (34.3) | 7 (20.0) | |
| Mothers East (*N* = 33) | 4 (12.1) | 11 (33.3) | 8 (24.4) | 10 (30.3) | $X_{(3)}^2 = 2.46$ (n. s.) |
| Daughters West (*N* = 35) | 5 (14.3) | 18 (51.4) | 6 (17.1) | 6 (17.1) | |
| Daughters East (*N* = 33) | 10 (30.3) | 7 (21.2) | 2 (6.0) | 14 (42.4) | $X_{(3)}^2 = 14.86^{**}$ |

Table 3 shows that within the West German sample, the somatic development of mothers and daughters is higly correlated (beta = .59, $p <$ .01). The birth order comparison (first cell of third column) shows that this result could just as well be due to the higher rate of firstborn daughters within the West German sample. Similarly, it is possible that the discontinuity of childhood contexts in the East German sample (second cell of second column) is not due to region-specific reasons, but may be caused by the higher rate of lastborn daughters in the East German sample, who show less similarities with their mothers than firstborns (second cell of third column). The intergenerational comparison of the mean age at menarche shows that there's a strong correlation between the age at menarche of firstborn daughters with the age at menarche of their mothers ($r$ = .70**, age controlled), and not between lastborn daughters and their mothers ($r$ = -.02 (n. s.). In addition, there is also a higher dissimilarity in the age at menarche in mother–

lastborn-dyads (mothers: 13.9 years, daughters: 12.7, $t$ = -1.8(*) than in mother–firstborn-dyads (mothers: 13.6 yrs., daughters: 12.8 yrs., n. s.).

TABLE 3: Comparison of Linear Regressions: West Germany with Firstborn Daughters and East Germany with Lastborn Daughters within the mother-daughter samples. (method backward; partly adapted from Chasiotis et al., 1998)

| Dependent variable:<br>Daughter' s age at menarche | West Germany<br>(N = 35) | Firstborns<br>(N = 20) |
|---|---|---|
| Independent variables (p < .10) | | |
| Mother's age at menarche | .59** | .79*** |
| Externalizing in childhood | n. s. | -.52* |
| Resource availability in childhood | .35* | n. s. |
| Adjusted $r^2$ (*F*- value) | .33** (8.3) | .46** (5.33) |
| Dependent variable:<br>Daughter's age at menarche | East Germany<br>(N = 33) | Lastborns<br>(N = 14) |
| Independent variables (*p* < .10) | | |
| Mother's age at menarche | n.s | n.s. |
| Internalizing in childhood | -.49** | -.54* |
| Adjusted $r^2$ (F- value) | .30** (6.1) | .23* (5.27) |

*$p < .05$;**$p < .01$

The reanalysis of the data first presented in Chasiotis et al. (1998) thus shows that these sample differences could just as well be caused by birth order effects rather than East–West differences. To ensure that this interpretation of the differences between the 35 West German and the 33 East German mother-daughter dyads holds true, we now expand our analysis to all female subjects in both samples in East ($N$ = 78) and West ($N$ = 103).

Table 4 includes the linear regressions for all female subjects in West and East Germany. It appears that only the West German sample shows significant and expected effects of the childhood variables on the age at menarche. In this sample, besides the positive correlation of the age at menarche with subjects' age, there is a negative correlation of internalizing behavioral problems in childhood with the age at menarche (beta = -.29, $p < .001$) and a delaying effect of the critical life event of the birth of a sibling (beta = .32, $p < .001$). This effect led to the discovery of a delay of the age at menarche in birth orders with younger siblings, especially firstborns (Chasiotis, 1999).

The consideration of birth orders in the East and West German samples leads to the interesting interpretation that the lacking effects of the childhood variables in the East German sample (see table 4 second column) are caused by the East German birth orders with siblings. The only children of the West German sample (third column) show a similarity with the lastborns (ninth column) since, as theoretically predicted, their maturation is affected by internalizing problems during childhood. Only children of the East German sample (fourth column) show two expected effects of resource availability and unemployment in childhood. Unemployment and a bad resource availability in childhood lead to an accelaration of sexual maturation in only children in the East German sample. In East Germany, only childrens' age at menarche does not increase (as expected by the secular trend, cf. Tanner, 1978), but decreases with only childrens' age (see Falbo, 1978 for a discussion of the often socioeconomically special case of only children). The somatic

TABLE 4: Comparison of Linear Regressions in East (Halle) and West Germany (Osnabrueck) by Birth Order

| DV: Age at Menarche | Female samples | Only | Firstborn | Middle | Lastborn |
|---|---|---|---|---|---|
| **Independent variables:** 8 childhood variables | West (N=103) | West (N=18) | West (N=35) | West (N=25) | West (N=17) |
| Age | .33*** | | | | .44* |
| Loss | | | | .51* | |
| Internalizing | -.29*** | -.50* | all | | -.59* |
| Unemploy. | | | n. s. | | |
| Birth of sibling | .32*** | | | | |
| Adjusted r2 | .19*** | .28* | n.s. | | |
| (F-value) | (8.7) | (4.5) | | | |
| | East (N = 78) | East (N = 22) | East (N = 25) | East (N = 12) | East (N = 17) |
| Age | | -.45* | .55** | | |
| Loss | | -.42* | | | -.42* |
| Internalizing | All | | | All | |
| Unemploy. | n.s. | -.54* | | n.s. | |
| Resource Availability | | .49* | | | |
| Birth of Sibling | | | | | |
| Adjusted r2 | n.s. | .38* (3.5) | .27** | n.s. | n.s. |
| (F-value) | | | (10.4) | | |

Note: Only variables with at least one effect with p < .05 are shown (*p < .05;**p < .01; ***p<.001).

development of the firstborns in Osnabrueck (fifth column) and in Halle (sixth column) is independent of the childhood variables we used. The middleborns also show only one negligible effect (seventh column) of the loss of a relative on the age at menarche in the Western sample.

## DISCUSSION

### Birth order specific developmental pathways?

Birth order shows significant and (mainly) expected effects of childhood variables on the age at menarche for women who do not have younger siblings (i. e. only children or laterborns). In contrast, birth orders with younger siblings (i. e. firstborns and middleborns), show no such effects. Most interestingly, it seems that the absence or existence of younger siblings influences the age at menarche, and not the "cultural" origin of the subjects. These results indicate the possibility of the danger of a cultural interpretation of cross-sample differences from different contextual environments. In our previous study (Chasiotis et al., 1998) we interpreted differences in intergenerational context continuity between the parental and filial generations in East and West Germany as being caused by different sociocultural milieus prevalent in the former Federal Republic of Germany and the German Democratic Republic. With the reanalysis of the data presented here, we showed that this interpretation was partly premature. As in our earlier study, the reanalysis presented here also revealed that the onset of puberty is affected by intergenerational context discontinuity. It appears, however, that these context discontinuities between the generations could be interpreted as primarily due to the different childhood experiences of lastborn daughters and their mothers. There is a stronger intergenerational continuity between mothers and firstborn daughters, independent of the cultural contextual background. Expanding our analysis to all female subjects in East and West, our results confirmed the possibility of a birth order dependency of the evolutionary theory of socialization. The pattern especially reveals an accelerating effect of childhood variables on the somatic development of children without younger siblings.

Childhood contexts of children without younger siblings (only children and last-borns), could be similar to contexts with psychosocial stress which accelerates sexual maturation. Children with younger siblings (first- and middle-borns), on the other hand, do not show accelerating effects of childhood stress on maturation. Accordingly, this stress factor discussed in evolutionary socialization models (Belsky et al., 1991; Chisholm, 1993, 1996, 1999) could be mediated through birth order specific socialization. The main difference between children with siblings and those without siblings can be attributed to the fact that only the former can (and often have to) take responsibility for their younger siblings by acting as surrogate parents. Since the acceleration of maturation can mainly be observed in children without siblings, this could mean that the developmental pathways described in Belsky et al. (1991) might be valid especially for only children and lastborns. As detailed analyses in our West German sample suggest, firstborn daughters of the upper class are especially prone to follow parental advice, retard their own somatic and reproductive development and tend to act as surrogate parents (or "helpers at the nest", cf. Chasiotis, 1999; see also Belsky, 1997a, b). In an earlier paper, Belsky (1981) pointed at the danger of neglecting the family constellation beyond the mother-father-child triad. Despite the contextualistic approach proposed by Belsky et al. (1991), by neglecting the role of siblings, one still might have a too individualistic view on development (Sutton-Smith, 1982).

Poortinga, van de Vijver, Joe and van de Koppel (1987) used the metaphor "peeling the onion called culture" to demonstrate that "*the idea of a hidden essence is missing. When peeling an onion you take off layer after layer until in the end the onion has disappeared*" (Poortinga et al., 1987, p. 22). Although this statement is certainly provocative, it focusses on the importance of identifying meaningful variables which might contribute to the understanding of individual contextual adaptations and ultimately, to the understanding of culture. Our data support the view that these variables might exert similar experiences across different cultures in mediating psychological, somatic and reproductive trajectories. It could be speculated that the psychological characteristics that are attributed to different cultural influences reflect systematic differences in family constellations in different societies. For example, the differences in self-orientations which are interpreted as culture specific independent or interdependent world views (Markus & Kitayama, 1991; Triandis, 1989) might at least partly depend on systematic biases of children with or without siblings in the cultural samples. Of course, it can be argued that cultural influences per se influence the composition and structure of the family. Yet there is a long tradition in anthropology and psychology to view maintenance systems, of which the family structure is one aspect, as contingent upon environmental conditions and resources (Whiting, 1963, 1977). Moreover, demographic data indicate that changes in the reproductive behavior precede the changes of cultural values, with an inertia of approximately one generation (Birg, 1996; Raeff, Greenfield & Quiroz, 2000; Voland, Dunbar, Engel & Stephan, 1997). The identification of meaningful variables helps to disentangle the fuzzy conception of culture that dominates many cross-cultural comparisons.

### Limitations of our study

Our study was limited to a comparison of birth orders from different families. In future studies, intrafamilial comparisons of birth orders ought to be done in order to test if there are *intra*familial differing developmental pathways and if they are caused by the evolutionary adaptation to different birth order niches. Furthermore, it remains to be seen if the birth order effects found in the female sample on somatic development are also valid for males (Lumière, Quinsey & Craig, 1996). Equally important is the inclusion of culturally more heterogenous samples than the comparison of East and West German samples. Finally, it is necessary to extend the analysis to more psychological parameters of the developmental pathways (Chasiotis, 1999; Keller, 2000). Theoretical speculations aside, the methodological argument which can be derived from the obtained results is that it is at least useful to control birth order, social origin and their interactions in cross-cultural comparisons.

## REFERENCES

Belsky, J. (1981). Early human experience: A family perspective. *Developmental Psychology, 17,* 3-23.

Belsky, J. (1997a). Attachment, mating, and parenting. An evolutionary interpretation. *Human Nature, 8,* 361-381.

Belsky, J. (1997b). Variation in susceptibility to environmental influence: An evolutionary argument. *Psychological Inquiry, 8,* 182-186.

Belsky, J., Steinberg, L. and Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62,* 647 - 670.

Birg, H. (1996). *Die Weltbevölkerung. Dynamik und Gefahren. (The world population. Dynamics and dangers).* Munich: Beck.

Brooks - Gunn, J., Warren, M., Rosso, J. and Gargiulo, J. (1987). Validity of self - report measures of girl's pubertal status. *Child Development, 58,* 829 - 841.

Chasiotis, A. (1999). *Kindheit und Lebenslauf. Untersuchungen zur evolutionären Psychologie der Lebensspanne. (Childhood and lifespan. Studies in evolutionary life-span psychology).* Bern: Huber.

Chasiotis, A., Keller, H. and Restemeier, R. (1992). *Childhood experience, parental attitudes and family development: A longitudinal test of evolutionary assumptions.* Paper presented at the "10th Conference of the European Sociobiological Society (ESS)", September 1992, Augsburg, FRG.

Chasiotis, A. and Keller, H. (1994). Evolutionary psychology and developmental cross-cultural psychology. In A.-M. Bouvy, F. v. d. Vijver, P. Boski and P. Schmitz (Eds.). *Journeys into cross-cultural psychology. Selected papers from the 11th International Conference of the International Association for Cross-Cultural Psychology* (pp. 68-82). Lisse: Swets and Zeitlinger.

Chasiotis, A., Restemeier, R., Riemenschneider, U., Zach, U. and Keller, H. (1995). *Zur Gültigkeit von Erinnerungen an die frühe Kindheit. Ergebnisse einer Validierungsstudie eines Fragebogens zur evolutionären Sozialisationstheorie. (On the validity of retrospective recall of early childhood experiences. Results of a validation study of a questionnaire on the evolutionary theory of socialization).* Poster presented at the 12th German Conference of Developmental Psychology, September 1995, Leipzig, FRG.

Chasiotis. A.. Riemenschneider. U.. Restemeier. R.. Cappenberg. M.. Völker. S.. Keller. H. and Lohaus. A. (1997). Early infancy and the evolutionary theory of socialization. In W. Koops. J. B. Hoeksma and D. C. van den Boom (Eds.). *Development of interaction and attachment: traditional and non-traditional approaches,* (pp. 305 – 312). Amsterdam: Royal Dutch Academy of Arts and Sciences.

Chasiotis. A. & Scheffer. D. (1998). *Familiäre Entwicklungsmuster in Deutschland nach der Vereinigung – Eine Überprüfung der evolutionären Sozialisationstheorie. (Patterns of family development in Germany after Reunification – A test of the evolutionary theory of socialization).* Research report to the German Research Foundation (DFG).

Chasiotis. A.. Scheffer. D.. Restemeier. R. & Keller. H. (1998). Intergenerational context discontinuity affects the onset of puberty: A comparison of parent-child dyads in West and East Germany. *Human Nature, 9,* 321-339.

Chisholm. J. (1993). Death. hope. and sex: Life - history theory and the development of reproductive strategies. *Current Anthropology, 34,* 1 - 24.

Chisholm. J. (1996). The evolutionary ecology of attachment organization. *Human Nature, 7,* 1 - 38.

Chisholm. J. (1999). *Death, hope, and sex. Steps to an evolutionary ecology of mind and morality.* Cambridge. UK: Cambridge University Press.

Davis. J. N. (1997). Birth order. sibship size. and status in modern Canada. *Human Nature, 8,* 205-230.

Dunn. J. & Kendrick. C. (1982a). Siblings and their mothers: Developing relationships within the family. In M. Lamb & B. Sutton-Smith (Eds.). *Sibling relationships: Their nature and significance across the lifespan* (pp. 39 - 60). Hillsdale. NJ: Erlbaum.

Dunn. J. & Kendrick. C. (1982b). *Siblings: Love, envy, and understanding.* Cambridge. MA: Harvard University Press.

Ernst. C. & Angst. J. (1983). *Birth order: Its influence on personality.* NY: Springer.

Falbo. T. (1978). Reasons for having an only child. *Journal of Population, 1,* 181-184.

Graber. J.. Brooks - Gunn. J. and Warren. M. (1995). The antecedents of menarcheal age: Heredity. family environment. and stressful life events. *Child Development, 66,* 346 - 359.

Hamilton. W. (1964). The genetical evolution of social behavior (I + II). *Journal of Theoretical Biology, 7,* 1-52.

Jacobs. B. S. & Moss. H. A. (1976). Birth order and sex of sibling as determinants of mother-infant interaction. *Child Development, 47,* 315 – 322.

Jaffe. M. (1991). *Understanding parenting.* Dubuque. IA: WCB.

Jones. B.. Leeton. J.. McLeod. I. & Wood. C. (1972). Factors influencing the age of menarche in a lower socio-economic group in Melbourne. *Medical Journal of Australia, 2,* 533-535.

Keller. H. (1997). Evolutionary approaches. In J. W. Berry. Y. H. Poortinga. & J. Pandey (Eds.). *Handbook of Cross-Cultural Psychology, Volume 1: Theory and Method ($2^{nd}$ ed.)* (pp. 215-255). Boston: Ally & Bacon.

Keller. H. (2000). Parent-child relationships from an evolutionary perspective. *American Behavioral Scientist, 43,* 957-969.

Keller, H. & Greenfield, P. M. (2000). History and future of development in cross-cultural psychology. *Journal of Cross-Cultural Psychology, 31 (1)*, 52-62.

Keller, H. & Zach, U. (2002 ). Gender and birth position as marker variables for differential parental treatment. *International Journal of Behavioral Development. 26*, (2), 177-184.

Kleining, G. & Moore, H. (1968). Soziale Selbsteinstufung (SSE). Ein Instrument zur Messung sozialer Schichten. (Social self-categorization. An instrument to measure social strata). *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 29*, 502-552.

Lamb, M. & Sutton-Smith, B. (Eds.) (1982). *Sibling relationships: Their nature and significance across the lifespan.* Hillsdale, NJ: Erlbaum.

Lumière, M., Quinsey, V. & Craig, W. (1996). Why children from the same family are so different from one another. *Human Nature, 7*, 281-290.

Markus, H. R. & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224 – 253.

Moore, G., Cohn, J. & Campbell, S. (1997). Mother's affective behavior with infant siblings: Stability and change. *Developmental Psychology, 33*, 856-860.

Moore, S. & Rosenthal, D. (1993). *Sexuality in adolescence.* NY: Routledge.

Noack, P., Hofer, M., Kracke, B. and Klein-Allermann, E. (1995). Adolescents and their parents facing social change: Families in East and West Germany after Unification. In Noack, P., Hofer, M. & Youniss, J., (Eds.), *Psychosocial responses to social change* (pp. 129-148). Berlin: Walter de Gruyter.

Poortinga, Y. H., van de Vijver, F. J. R., Joe, R. C. & van de Koppel, J. M. H. (1987). Peeling the onion called culture: A synopsis. In C. Kagitcibasi (Ed.), *Growth and Progress in Cross-Cultural Psychology* (pp. 22-34). Lisse: Swets & Zeitlinger.

Raeff, C., Greenfied, P. M., & Quiroz, B. (2000). Developing interpersonal relationships in the cultural contexts of individualism and collectivism. In S. Harkness, C. Raeff, & C. R. Super (Eds.), *The social construction of the child. New directions in child development* (pp. 59-74). San Francisco: Jossey-Bass.

Salmon, C., & Daly, M. (1998). Birth order and familial sentiment: middleborns are different. *Evolution and Human Behavior, 19*, 299-312.

Scheffer, D., Chasiotis, A., Restemeier, R., Keller, H. & Schölmerich, A. (2000). Retrospektive Erfassung frühkindlicher Beziehungsaspekte: Konstruktion der Beziehungs-Kontext-Skala. (Retrospective measurement of representations of childhood relationships. Construction of the Relation-Context-Scale). *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie, 32*, 2-13.

Sulloway, F. (1996). *Born to rebel: Birth order, Family Dynamics, and Creative Lives.* NY: Pantheon Books.

Sulloway, F. (2001). Birth order, sibling competition, and human behavior. In P. Davies & H. Holcomb III. (Eds.), *Conceptual Challenges in Evolutionary Psychology: Innovative Research Strategies* (pp. 39 – 83). Boston: Kluwer Academic Publishers.

Tanner, J. (1978). *Foetus into man: Physical growth from conception to maturity.*

London: Open Books.

Toman, W. (1971). The duplication theorem of social relationships as tested in the general population. *Psychological Review, 78,* 380-390.

Triandis, H. C. (1989). Cross-cultural studies of individualism and collectivism. *Nebraska Symposium on Motivation, 37,* 41 – 133.

Trivers, R. (1974). Parent - offspring conflict. *American Zoologist, 14,* 249 - 264.

Trivers, R., & Willard, D. (1973). Natural selection of parental ability to vary the sex ratio of offspring. *Science, 179,* 90-92.

Voland, E., Dunbar, R., Engel, C. and Stephan, P. (1997). Population increase and sex biased parental investment in humans: Evidence from 18th and 19th century Germany. *Current Anthropology, 38,* 129 - 135.

Wagner, M., Schubert, H. & Schubert, D. (1979). Sibship-constellation effects on psychosocial development, creativity, and health. In H. Reese & L. Lipsitt (Eds.), *Advances in child development and behavior, Volume 14* (pp. 57 - 149). NY: Academic Press.

Whiting, B. B. (1963). *Six cultures. Studies of child rearing.* New York: Wiley.

Whiting, J. W. (1977). A model for psychocultural research. In P. Leiderman, S. Tulkin & A. Rosenfeld (Eds.), *Culture and infancy. Variations in the human experience* (pp. 29-48). New York: Academic Press.

Zabin, L. & Hayward, S. (1993). *Adolescent sexual behavior and child bearing.* NY: Sage.

---

*Author notes*: Athanasios Chasiotis and Heidi Keller, Cross-cultural Life-span Psychology Research Group, Human Sciences Department, University of Osnabrueck, Osnabrueck, Germany. David Scheffer, Psychology Department, University of the Federal Army Hamburg, Hamburg, Germany.

This study and the validation of the scales and measures used in it were supported by three grants of the German Research Foundation (Deutsche Forschungsgemeinschaft) to Heidi Keller (Ke 263/24-1 and Ke 263/26-1) and to Athanasios Chasiotis (Ch 242/2-2). We would like to thank Juliane Ball, Mirjam Ebersbach, Susanne Körner, Anke Lichte, Jörn Lüderwald, Ramona Restemeier, Penny Schiffer, Axel Schölmerich and Wolfgang Winkler for their help in data acquisition.

# Psychology Poster Presentations: Analysis of Characteristics and Recommendations for Improvement

David P. Nalbone
*Purdue University Calumet*

Christopher L. Aberson
*Humboldt State University*

Scientific research requires self-governance on the part of scientists to ensure that findings are disseminated accurately and with integrity. Poster presentations are a primary means of information dissemination for psychologists. In order to assess the manner that researchers disseminate their findings, we examined the characteristics of poster presentations at two national psychology conventions. Using a combination of systematic random sampling and cluster sampling, we selected 175 posters from the two conventions. One of three raters rated each poster on several different characteristics. Results provided empirically supported suggestions for creating effective poster presentations. We provide recommendations based upon these findings that stress the value of poster presentations and the ethical responsibilities of presenters.

Scientific progress requires that scientists accurately disseminate research results (APA, 2002b; Comer, 1995). In presenting research, psychologists should include sufficient information about the methods to allow for replications and sufficient information about results to allow for evaluation of findings (APA, 2001a; Drotar, 2000). To address dissemination issues, we examined the content of poster presentations at two national psychological conventions. We present an evaluation of poster presentations, track responses to requests for materials, and provide several suggestions for improving poster presentation.

For psychologists, poster presentations are a primary medium for information dissemination (Drotar, 2000). As an illustration of this point, the most recent American Psychological Association (APA) convention in 2002 featured far more poster format presentations than presentations in any other category (APA, 2002a). Additionally, for many conventions, a poster is the only presentation option available outside of symposium

---

*Author info*: Correspondence should be sent to: Dr. David Nalbone, Dept. of Behavioral Sciences, Purdue University – Calumet, 2200 169th St., Hammond, IN 46323 E-mail: dnalbone@calumet.purdue.edu

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 171-180.

© NAJP

participation. The ability of posters to accurately disseminate information is helpful to those attending poster sessions so they can evaluate the importance and quality of the study being presented (Drotar, 2000). Finally, accurate dissemination is valuable to presenters, who are presumably more likely to receive feedback from colleagues for a well-presented, as opposed to a poorly-presented, poster presentation.

### Prior Research on Poster Presentations

Welch and Waehler (1996) examined the preferences of convention attendees with respect to poster presentations. They found the best aspects of posters fit four general categories: (1) visual presentation, including use of large print throughout, high-quality graphics, and the use of color; (2) effectiveness of communication, including brevity and clarity of language, use of supportive graphics, and highlighting of the poster's main points; (3) specific aspects of the work, including personal relevance to the audience;, and (4) characteristics of the presenter. In addition, the researchers solicited respondents' advice to presenters. The majority of responses emphasized a need to improve the visual appearance, including recommendations to use a larger font, present fewer pages of material, and create posters that are more professional in appearance.

Several researchers examined response rates of requests for materials made to poster presenters. Rienzi and Allen (1994) found a 51% response rate to poster requests at three conventions, with higher response rates at national conventions (61% at American Psychological Society, 60% at APA) than at a regional convention (34% at the Western Psychological Association). Brewer, Buntrock, Diehl, and Van Raalte (1997) found a 39% response rate to requests at a sports psychology convention. Both groups of researchers agreed that presenters ought to pay greater attention to their professional obligations.

Others have addressed the issue of researchers' obligations to respond to requests for materials. Comer (1995) argued that "failure to share findings can markedly impede progress into a domain of inquiry" (p. 726), and urged advisors of doctoral students to emphasize professional responsibilities to respond to such requests. Mooney (1995) recommended formalization of professional obligations in the APA ethics code. The current APA ethics code devotes scant attention to the issue, indicating only that psychologists "create, and to the extent the records are under their control, maintain, disseminate, store, retain, and dispose of records and data relating to their professional and scientific work in order to...allow for replication of research design and analyses..." (APA, 2002b, Standard 6.01, p. 1067). Others have argued that fulfilling such requests is at the discretion of the presenter, is most likely to occur if interactions between the presenter and the requester are not cursory, and even that Rienzi and Allen (1994) "were fortunate to get the response they received. *Unquestionably* [italics added], they were not entitled to any of the papers they received" (Olbrisch, 1995, p. 727). Whereas it seems that interested parties are entitled to receive papers they request in light of the obligation to do so stipulated in the APA ethics code (APA, 1992, 2002b), it is notable that the manner that requests are made may influence compliance with requests. Indeed, Mooney (1995) found a higher response rate for letters sent to a study's author requesting a poster that was about to be presented at a convention in a few weeks (96%) than for on-site requests at a convention made to the study's author (63%), highlighting the impact of personal appeals on request compliance.

In order to assess how researchers disseminate their findings, we conducted a descriptive study of the characteristics of poster presentations at two national psychology conventions. Additionally, we tracked the number of no-shows at each convention and examined return rates for paper requests. Our results provide empirically supported suggestions for creating effective poster presentations, and address issues of professional obligations inherent in the scientific enterprise. Furthermore, we present analyses by field, allowing for greater specificity in suggestions by area of concentration.

## METHOD

### Sample

Using a combination of systematic random sampling and cluster sampling, we selected 175 posters from two national conventions (APS in June, 2001 and APA in August, 2001). At the APS convention, there were five poster sessions with approximately 150 posters scheduled for presentation in each session. For each session, a random start was selected from the first 15 posters for each of two raters, such that each rater started on a different poster. The randomly selected start poster and each 15th poster thereafter were rated, yielding approximately ten posters per poster session per rater, and 89 posters from this convention. One of the raters attended all of the poster sessions; the second rater attended only the first four sessions. At the APA convention, there were 67 poster sessions, with sessions containing highly variable numbers of posters. Instead of attending and coding posters from each session, we randomly selected nine sessions to sample (i.e., used cluster sampling). Using those nine sessions, we repeated the procedure outlined above, this time randomly selecting a poster from the first 20 posters to start and every 20th poster thereafter to ensure roughly equal sample sizes for each convention, yielding 86 posters from this convention. A single rater attended the APA sessions.

### Ratings

The raters rated each poster on the presence or absence of several different characteristics, including (a) presence of an introduction to the literature; (b) absence of too much detail in the introduction; (c) inclusion of hypotheses; (d) testability of hypotheses; (e) inclusion of a summary of methods; (f) inclusion of a summary of results; (g) inclusion of tables; (h) discussions of results, implications, and limitations (each coded separately); and (i) availability of handouts. Prior to the actual ratings, the three raters pilot tested the rating sheets and discussed potential disagreements among ratings in order to increase the likelihood of each rater viewing each poster in the same way. All three raters could not attend each convention, so we established reliability through ratings of a subset of 20 poster handouts that were duplicates of the actual posters. Cumulative reliability, assessed using percentage agreement, yielded 81% overall agreement, with no single item yielding agreement of less than 72%. All rater disagreements were resolved before data entry.

## RESULTS AND DISCUSSION

### Strengths and Weaknesses of Posters

Social/personality psychology contributed the most posters (58; 37%), followed by clinical (37; 23%), cognitive (18; 11%), developmental/educational (14; 9%), biological/physiological (13; 8%), gender/cross-cultural (6; 4%), quantitative (5; 3%), and other (8; 5%). Table 1 includes descriptive data showing the percentage of posters possessing each rated characteristic. Overall, posters exhibited several strengths (defined here as occurring in at least 75% of posters) but, also, more than a few weaknesses (defined here as occurring in less than 75% of posters). Strengths included inclusion of most of the major elements of empirical scientific writing, such as an abstract, summary of literature, methods, summary of results, tables or graphs, and conclusions. Posters were also strong in terms of standard sectioning (e.g., introduction, methods, results, discussion) and inclusion of handouts for interested readers. Weaknesses included too much background detail (i.e., several pages of information rather than highlights), lack of hypotheses or of testable hypotheses, failure to discuss implications or limitations, and problems with several stylistic elements, including small font size, use of tables, graphs, or figures not easily interpretable without text, and poor general organization. Whereas some problems may result from differences in presentation style, several of the weaknesses, especially those concerning hypotheses and failure to discuss limitations and implications, denote particular problems for scientists who wish to grasp the nature and impact of a given researcher's work. An additional source of these problems may lie in the nature of the research presented. The standard poster formatting suggested by APA (2001b) is generally not suitable for qualitative research and theoretical reviews. The development of new guidelines appropriate to these types of posters would be of great benefit.

### Professional Obligations

We counted 16 (9%) of the 175 sampled posters as no-shows. According to the APA and APS program supplements, none of the presenters in this group officially withdrew. Given the limited space available for presentations, we find this number to be unfortunately high. Of course, some no-shows are expected due to serious illnesses, travel problems, and the lengthy periods between submission, acceptance, and presentation. However, a 9% no-show rate seems particularly high considering that convention organizers may have rejected other presentations due to space limitations.

Of the 159 presented posters, 130 (82%) provided a handout, either a poster summary or a full paper. For 26 of the 29 presentations not providing handouts, we were able to request materials by providing a physical mail address, an e-mail address, or both, depending on the presenter's preference. For the other three presentations that did not provide handouts, the researcher provided no sign-up sheet and was not available during the poster session for us to request a handout. In the three months following the end of the convention, we received responses to only 8 of the 26 requests (31%). Although nearly three-fourths of the participants provided handouts, amongst those not providing handouts but offering to send them, over two-thirds failed to do so. This is troubling as it suggests that either those researchers had not completed the work presented or they did not feel obligated to provide materials to interested individuals. In either case, such researchers appear to be in violation of one of the basic precepts of scientific research. APA's (2000) Ethical Principles of Psychologists and Code of Conduct clearly states that psychologists should "make public their knowledge of psychology in order to contribute to human welfare" (p. 135). Those individuals who do not provide copies of their papers are violating principles of ethical conduct regarding sharing of results. Previous research on requests for papers that found response rates of over 60% for the same national conventions in 1993 and 1994 (Rienzi & Allen, 1994) suggested a downturn in adherence to professional obligations. Placed in a broader technological context, the poor response rate is more troubling than it appears upon initial examination. As e-mail technology has greatly improved since 1994. it is now very simple to send multiple copies of papers to extensive lists of colleagues. at no cost to the researcher. in a matter of minutes. Thus. it is more difficult to justify not responding to a request for information pertinent to one's research. as the difficulty of and time involved in doing so has greatly decreased. and the monetary cost of doing so has been eliminated.

**Factor Structure of Poster Criteria**

Using principal components analysis with Varimax rotation on 13 of the poster content variables (excluding those that were stylistic). we produced a five-component solution that explained 66% of the variance (see Table 1). The first component consisted of inclusion of an abstract and the introduction. and organization of the poster's sections: we labeled this "Background and Organization." The second component consisted of inclusion of methods. results. and conclusions: we labeled this "Standard Methodology." The third component consisted of inclusion of hypotheses and of testable hypotheses: we labeled this "Hypotheses." The fourth

TABLE 1 Percentage Meeting Poster Rating Criteria and Principal Components Loadings

| | | Component | | | | |
|---|---|---|---|---|---|---|
| Criterion | % | 1 | 2 | 3 | 4 | 5 |
| Abstract clearly summarizes study | 75 | .70 | .01 | .10 | -.20 | .14 |
| Summary of literature review provided | 87 | .70 | .10 | -.03 | .14 | -.06 |
| Too much detail in literature review | 31 | .53 | -.33 | .04 | .37 | .30 |
| Hypothesis(es) provided | 48 | .00 | .09 | .94 | .01 | -.08 |
| Hypothesis(es) provided are testable | 48 | .07 | .10 | .94 | .00 | .00 |
| Summary of method provided | 96 | .05 | .73 | .12 | .10 | .22 |
| Summary of main results provided | 89 | .28 | .68 | -.09 | .02 | .13 |
| Tables or graphs provided | 91 | -.18 | .25 | .09 | -.02 | .78 |
| Summary of main conclusions provided | 91 | .01 | .77 | .19 | .09 | -.09 |
| Summary of implications provided | 45 | .05 | .04 | .11 | .80 | .07 |
| Summary of limitations provided | 18 | .00 | .16 | -.11 | .70 | -.14 |
| Stand-alone tables. graphs. & figures | 62 | .24 | -.01 | -.19 | -.04 | .72 |
| Poster follows standard sectioning | 81 | .75 | .38 | .00 | .06 | -.06 |
| Font readable (at 6') | 71 | | | | | |
| Poster is well-organized. not too cluttered | 53 | | | | | |
| Professional quality poster | 27 | | | | | |
| Handouts provided | 82 | | | | | |

*Note.* High loadings (above .50) shown in italics. Eigenvalues and cumulative percentages of variance explained for the five factors were as follows: component one. 2.63. 20%: component two. 1.95. 15%: component three. 1.50. 12%: component four. 1.33. 10%: component five. 1.15. 9%.

component consisted of inclusion of implications and limitations: we labeled this "Context." The fifth component consisted of inclusion of tables and of the readability of tables: we labeled this "Tables."

**Comparisons Across Sub-fields**

We computed factor scores based on the principal components analysis and used these scores as dependent variables in a series of univariate ANOVAs, with sub-field as the independent variable. Factor scores are preferred over summation of items to create sub-scales, as factor scores produce estimates that are non-overlapping and perfectly reliable (Tabachnick & Fidell, 2001). Post-hoc Tukey tests compared means when the omnibus *F* for a given test was significant. For the first component score, Background and Organization, significant differences existed, $F_{(4,\ 135)} = 6.7$, $p < .001$, $\eta^2 = .17$, with clinical, developmental/educational, and personality/social posters scoring higher than cognitive posters. No differences emerged among sub-fields for the second component score, Standard Methodology, $F_{(4,\ 135)} = 0.8$, $p = .52$, $\eta^2 = .02$. For the third component score, Hypotheses, significant differences existed, $F_{(4,\ 135)} = 5.6$, $p < .001$, $\eta^2 = .14$ with personality/social posters scoring significantly higher than clinical posters. For the fourth component score, Context, no significant differences existed despite a significant omnibus *F*, $F_{(4,\ 135)} = 2.5$, $p = .045$, $\eta^2 = .07$, but there was a trend for biological/physiological and personality/social posters to score higher than cognitive posters (both *p*s = .06). For the fifth component score, Tables, no significant differences existed, $F_{(4,\ 135)} = 0.0$, $p = 1.0$, $\eta^2 = .00$. These results further highlight some of the characteristic tendencies of presenters from each of psychology's sub-fields, and may help researchers to critique their work when preparing posters or manuscripts. In particular, these results suggest that cognitive poster presenters should devote considerably more attention to introductory material, to the organization of information, and to placing results into context, and that clinical poster presenters should devote more attention to presenting hypotheses, especially testable hypotheses.

**Recommendations**

*Researchers and advisors.* Acceptance of research for presentation requires an obligation to present the research and to follow up requests for further information. Presenters are generally able to fill requests for materials (Mooney, 1995), and the widespread availability of electronic mail eliminates cost issues. Thus, most presenters who fail to respond to requests must lack motivation to do so.

Second, regardless of concentration area, posters should communicate sufficient information for readers to comprehend the nature and the impact of the research discussed therein. Several failures to meet this standard need to be addressed, both overall and within specific subfields. Overall, most posters adequately presented method and results, but fewer focused clearly on hypotheses or research questions tested or on the implications and limitations of the research. Thus, the presenters failed to present sufficient material for readers to be able to evaluate the scientific merits of the presented research. In addition, greater visual impact ought to be achieved via posters that are more professional in appearance, by being less cluttered and more visually appealing. Poster presentations are a two-step process; posters first are selected for presentation based upon scientific merit, and then those posters accepted are put on public display. Once such posters are accepted, "packaging and presentation are important" (Welch & Waehler, 1996, p. 44).

Academic advisors hold an important role in improving poster presentations. Advisors should reinforce the suggestions above through supervision of all phases of student research presentations. Most specifically, advisors may improve students' presentations by ensuring that posters include adequate information regarding hypotheses, research questions, limitations, and implications, and that students fulfill post-presentation obligations such as providing requested materials.

*Convention organizers*. Convention organizers can improve poster presentation by providing examples of poster presentations and clearer instructions (see, for example, Blew & Christian, 1984). For instance, although the APA's poster presentation guidelines (APA, 2001b) that accompany the acceptance notice of each poster presentation provide a general overview of the elements to be included in a poster, they might be improved by making specific reference to the need to include testable hypotheses in empirical works. These instructions should emphasize the need to address all sections of a paper or poster, including what should be included in each section and a discussion of how to present theoretical and qualitative work. Although APA's poster presentation guidelines (APA, 2001b) note that "most successful posters provide brief statements of introduction, method, subjects, procedure, results, and conclusions," it is not clear what elements should be included in each of those sections, nor clear that failure to do so (except in the case of theoretical works) will likely produce an "unsuccessful" poster.

Given the low response rate to paper requests we found, organizers should clearly highlight the obligations inherent in presentation submission and acceptance. Our results suggest that some researchers lack the motivation to fulfill requests. Clearer statements of ethical and professional responsibilities inherent in presentation should improve compliance with requests for materials. Greater adherence to these obligations can result in presentations of higher quality at future conventions. raise the bar among students who will form the next generation of scholarly presenters. and ensure the dissemination of requested research results occurs. Such changes can improve the quality and scientific utility of poster presentations.

## REFERENCES

American Psychological Association. (1992). Ethical principles of psychologists and code of conduct. *American Psychologist, 47*. 1597-1611.

American Psychological Association. (2000). Ethical principles of psychologists and code of conduct. In B. D. Sales & S. Folkman (Eds.) *Ethics in research with human participants* (pp. 129-160). Washington. DC: Author.

American Psychological Association. (2001a). *Publication manual of the American Psychological Association (5th ed.)*. Washington. DC: Author.

American Psychological Association. (2001b). *Poster instructions*. [Brochure]. Washington. DC: Author.

American Psychological Association. (2002a). *Convention program: 110th annual convention*. Washington. DC: Author.

American Psychological Association. (2002b). Ethical principles of psychologists and code of conduct. *American Psychologist, 57*. 1060-1073.

Blew. P. A., & Christian, W. P. (1984). How to prepare effective poster presentations for professional conferences. *Behavior Therapist, 7*. 129-132.

Brewer. B. W., Buntrock. C. L., Diehl. N. S., & Van Raalte. J. L. (1997). Where have all the handouts gone?...Long time passing. *The Sport Psychologist, 11*. 345-348.

Comer. D. R. (1995). Don't disparage the regional presenter's dedication to research. *American Psychologist, 50*. 726.

Drotar. D. (2000). Presenting scientific data. In D. Drotar (Ed.). *Handbook of research in pediatric and clinical child psychology: Practical strategies and methods* (pp. 329-345).

Mooney. D. K. (1995). Requests for convention manuscripts: On-site versus letter response rates. *American Psychologist, 50*. 727-728.

Olbrisch. M. E. (1995). Reciprocity of professional obligations. *American Psychologist, 50*. 727.

Rienzi. B. M., & Allen. M. J. (1994). Poster presenters: Send us your papers. *American Psychologist, 49*, 681-682.

Tabachnick. B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn and Bacon.

Welch. A. A., & Waehler. C. A. (1996). Preferences about APA poster presentations. *Teaching of Psychology, 23*(1). 42-44.

---

*Author Note*: An earlier version of this paper was presented at the annual convention of the American Psychological Association, Chicago, IL, August 22-25, 2002. The authors wish to thank Elizabeth A. Muenk for serving as a rater of the posters, and two anonymous reviewers for their comments on an earlier draft of this manuscript.

# Effects of Odorant Administration on Objective and Subjective Measures of Sleep Quality, Post-Sleep Mood and Alertness, and Cognitive Performance

Bryan Raudenbush, Jerrod Koon, Jeffrey Smith,
& Phillip Zoladz
*Wheeling Jesuit University*

The present study investigated whether odorant administration during sleep affects sleep patterns, mood, cognitive functioning, and alertness. Participants were monitored for 3 nights, during exposure to jasmine odor, lavender odor, and a non-odored condition. Following sleep, participants completed questionnaires related to mood and tests of cognitive functioning, and indicated alertness level throughout the day. Jasmine odor led to greater sleep efficiency and reduced sleep movement, without differences in total sleep time, thus providing increased sleep quality without the need for additional sleep time. Upon awakening, jasmine condition participants rated their level of anxiety and vigor lower, and performed the cognitive tests more rapidly. Level of alertness in the jasmine condition was greater than the control condition during afternoon hours. These findings provide support for odorant administration as an adjunct to improve sleep, alertness, and mental performance.

In the past 20 years, research concerning olfaction has dramatically escalated, with researchers trying to connect the workings of the olfactory system and psychological interpretation of odors with areas such as mood, behavior, and performance (for a review, see Gilbert, 1995; Lorig, 2001). Businesses have also taken advantage of research findings, and marketed products such as aroma therapy oils and candles, while others have pleasant odors (e.g., synthetic cookie or baking bread scents) diffused into their business venues in hopes of attracting and stimulating customers and sales.

Research on the more psychological and cognitive aspects of odor effects are compelling. Knasko (1992) noted that certain odors can influence mood and health. While undergoing a series of creativity and personality tests, 90 participants answered questions concerning their mood and perceived health. In one session the testing room was scented with either lemon, lavender, or dimethyl sulfide (a particularly unpleasant

---

*Author info*: Correspondence should be sent to: Dr. Bryan Raudenbush, Wheeling Jesuit University, Dept. of Psychology, 316 Washington Avenue, Wheeling, WV 26003. E-mail: raudenbc@wju.edu.

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 181-192.

© NAJP

odor), while in another session the testing room was unscented. Fewer health symptoms were reported in the lemon condition and the presence of dimethyl sulfide resulted in the reporting of a less pleasant mood. Similar results were obtained by Knasko, Gilbert and Sabini (1990) when only the suggestion of an odor had been given to participants, without an actual odor being present. Rottman (1989) found that the presence of jasmine in a testing room enhanced performance accuracy of individuals on a cognitive task and lead to participants indicating more interest and motivation in the task. Lavender odor has been found to aid in the treatment of agitated behavior (Hensford, MacLaughlin, Wilkinson, Rosenvinge, Holmes, & Hopkins, 2002), leading to greater levels of relaxation, and has been found to reduce levels of mental stress (Yotsuya, Motomura, & Sakurai, 2001).

In the late 1980s, a series of research articles indicated that odors had widespread effects on the human central nervous system (Kobal & Hummel, 1988; Lorig & Schwartz, 1988; Van Toller, 1988), and that substantial changes in EEG activity occurred when odors were present. One explanation for the changes noted in EEG activity relates to attentional differences; EEG patterns change predictably when individuals actively attend to stimulus presentations. However, further research provided evidence that these EEG differences occurred even if the individuals were unaware that an odor was being administered (Lorig, Huffman, DeMartino & DeMarco, 1991). Thus, mere attention is not sufficient to alter such patterns.

Since odors have significant effects on behavior, cognitive performance, and the human nervous system, even in the absence of attention to and awareness of these odors, it is reasonable to suspect that the human body may respond to odors presented during sleep. Badia, Wesensten, Lammers, Culpepper and Harsh (1991) set out to test that hypothesis. These researchers assessed a variety of behavioral and physiological differences occurring in the presence of peppermint odor during stage 2 sleep. As opposed to the relaxing effects of jasmine and lavender odor, previous research on the effects of peppermint odor indicate that humans find it to be stimulating and arousing, with several studies noting that peppermint odor inhalation can improve alertness (Dember, Warm & Parasuraman, 1996; Jones, Ruhl, Warm & Dember, 1999; Warm, Dember & Parasuraman, 1991), vigor (Raudenbush, Meyer & Eppich, 2002), athletic performance (Raudenbush, Eppich, & Corley, 2001), and distract individuals from painful stimuli (Raudenbush, Koon, Meyer, Corley, & Flower, in press).

In their study, Badia et al. (1991) reported that their sleeping participants were able to indicate when the olfactory stimuli were being presented. In addition, during peppermint administration the percentage of EEG speeding was greater, heart rate tended to be higher for the first part of the night, and there was an inhibitory effect on EMG activity. Given these findings, presentations of odors during sleep may also influence sleep quality, which could further impact post-sleep measures such as cognitive performance, alertness, and mood. Since a stimulating peppermint odor can arouse and alert sleeping participants, it is possible that a relaxing odor may have the opposite effects.

The effects of sleep loss on various aspects of performance are many and significant. Harrison and Horne (1999) note that sleep deprivation leads to more rigid thinking and increased errors in performing a cognitive task. Fairclough and Graham (1999) found a safety-critical decline in lane-keeping performance during two hours of simulated driving for individuals whose sleep allowance had been cut in half. A host of other researchers have also tied the effects of sleep deprivation with decreased verbal creativity (Randazzo, Muehlbach, Schweitzer & Walsh, 1998), poor school grades (Wolfson & Carskadon, 1998), poor cognitive task performance (Pilcher & Walters, 1997), and inability to process logical sequences of events (Heuer, Spijkers, Kiesswetter & Schmidtke, 1998). Furthermore, a meta-analysis of the effects of sleep deprivation on functioning, using data from 19 research studies, indicates that mood is profoundly affected by sleep deprivation, with sleep deprived individuals being more agitated, unhappy, and despondent (Pilcher & Huffcut, 1996). Given that some type of sleep deprivation (typically in the form of non-clinical insomnia) affects approximately one-third of the total population (Sharpley, Attenburrow & Cowen, 1997), and these problems are traditionally treated with drugs that are expensive and have deleterious side effects, any non-pharmaceutical adjunct to promote increased sleep quality should be greatly accepted.

The following study is designed to investigate whether the presence of a relaxing odorant during sleep has any effect on sleep patterns during the night, measures of mood and cognitive functioning the following morning, and alertness throughout the day. Participants will be monitored during sleep for three nights, during which they will be exposed to one of three conditions. These conditions consist of the presentation of one of two odorants (jasmine or lavender) or a non-odored control condition. The decision to use the scents of jasmine and lavender is based on research indicating these odorants result in individuals reporting greater relaxation, less anxiety, and increased mood (Knasko, 1992; Romine, Bush, & Geist, 1999; Rottman, 1989; Yagyu, 1994). During sleep, objective measures such as sleep latency, duration, movement, and efficiency will be measured. In addition, objective and subjective measures of cognitive performance and mood will be assessed following the night in the sleep laboratory, and level of alertness will be recorded periodically throughout the next day.

Based on past research, it is expected that the presentation of the relaxing odors of jasmine and lavender would result in a general calming of the participant. If so, individuals should be able to fall asleep faster and have a more restful night of sleep. Given a more restful sleep, post-sleep measures of cognitive performance and mood should be higher in the odor conditions as compared to the control condition, and level of alertness should be enhanced throughout the day.

## METHOD

### Participants

Twenty participants (10 males, 10 females, mean age=19.8 yrs.) completed the study. For inclusion, participants first underwent a screening session, designed to eliminate those individuals indicating illicit drug use, prescription medication use, health problems, mood or mental disorders, allergies, olfactory sensitivity, anosmia, hyposmia, abnormal sleeping patterns, and/or sleeping pathology. Participants were college students, recruited through a flyer placed on campus, and compensated 75 dollars following the completion of the experiment.

### Stimuli and Odorant Conditions

Individuals participated for three sleep periods. These periods consisted of the presentation of jasmine odor, lavender odor, and a non-odored control condition. The odor conditions were maintained by aerating 15 ml of jasmine or lavender oil (Aldrich Co.) into tubing containing low-moderate flow (3 LPM) oxygen produced by an AirSep® Newlife Oxygen Concentrator. The oxygen concentrator is a portable device for producing variable oxygen flow on demand, which provides for greater control of oxygen flow rate than conventional oxygen tanks. In the non-odor control condition, only low-moderate flow oxygen was administered. The tubing was covertly positioned within the sleeping room and the scented or unadulterated oxygen diffused through the sleep room. Participants were not informed that odors were being presented.

### Sleep Room

The sleep room measured 2.75 m x 3.5 m and contained a standard single bed with box springs and mattress, nightstand table, and lamp. Bedding material consisted of a mattress cover, sheet, comforter, two pillows, and an additional blanket. The room was completely light-free when the door was closed and was maintained at $21^{\circ}C \pm 1^{\circ}C$.

### Sleep Measures

Measures of sleep quality and duration were recorded using a Mini

Mitter Actiwatch® Sleep Monitor. This device allowed for the recording of the following measures:

1. Sleep Efficiency: An index of the amount of time in bed that is actually spent sleeping, determined by dividing the actual sleep time by the time in bed and multiplying by 100.
2. Number of Minutes Spent Moving During Sleep: The period of time where movement occurs, between sleep start and sleep end, calculated by summing the number of epochs that are scored as mobile and multiplying that value by the epoch length in minutes. Epoch length was set at 0.25 minutes.
3. Movement Fragmentation Index: An index of restlessness, calculated by summing the "number of minutes spent moving percentage" with the "immobility phases of 1 minute percentage."
4. Sleep Time: The amount of time, between sleep start and sleep end that is scored as sleep. This is determined by summing the number of epochs that do not exceed the sensitivity threshold and multiplying that value by the epoch length in minutes. The sensitivity threshold was set at Mean Score in Active Period * K divided by Epoch Length, where K is a constant (equal to 0.888), and epoch length is the sampling interval in minutes (equal to 0.25).
5. Sleep Latency: The period of time required for sleep onset after going to bed.

### Inventories

Participants completed the *Profile of Mood States* (POMS: McNair, Lorr & Droppleman, 1971). The POMS contains a list of 65 adjectives concerning current mood. Participants indicate the extent to which each adjective describes them at a particular moment using a 5 point scale. For the present investigation, questions were assessed within three pertinent sub-scales: fatigue, vigor, and anxiety.

Participants also completed the *Digit-Symbol Substitution Test* (DSST: McLeod, Griffiths, Bigelow & Yingling, 1982). The DSST is a measure of both cognitive information processing speed and psychomotor performance. Participants must match a series of symbols and digits, and a faster completion time is indicative of greater cognitive processing and psychomotor performance. Different versions of the test were used for each condition to minimize practice effects.

### Procedure

After initial screening and acceptance for the study, participants were instructed as to the procedures of the experiment and reported to the laboratory prior to 11:45 pm of each testing date (the actual arrival time varied for each participant). As part of the screening protocol and scheduling of nights in the laboratory, the researchers ensured that the participants did not have any atypical events for the following day that might interfere with their normal sleep (i.e., examinations, early morning class or work commitments, presentations, etc.).

Participants performed the protocol three times, each time under a different odor condition (jasmine odor, lavender odor, non-odor control condition), separated by a minimum of two days and a maximum of seven days. The order of the conditions was randomly assigned. While there is some concern among investigators that a "first night effect" (i.e., sleeping in a novel environment) may lead to variations in recordings made the first night of sleep studies (Agnew, Webb, & Williams, 1966), such an effect is unlikely to have a significant impact in the present study. Participants were sleeping in University testing rooms, which housed accommodations and bedding equivalent to their own University dormitory rooms. In addition, there were no invasive measures, externally applied electrode leads, or external personal observation of them while sleeping, which have been shown to produce much of the variability due to the "first night effect" (Browman & Cartwright, 1980; Coble, McPartland, Silva, & Kupfer, 1974).

Participants were placed in the sleep room prior to midnight, and were instructed to leave the sleep room (which opened into a secure general testing area) when they were ready to begin their day, at which point the morning testing would begin. Sleep-wear was at the discretion of the participants, and alarm clocks were not allowed.

Upon awakening, participants first completed the *Digit-Symbol Substitution Test* (McLeod, Griffiths, Bigelow & Yingling, 1982). Participants were instructed that they should complete the task as quickly as possible (since they would be timed), but also as accurately as possible. They then completed the *Profile of Mood States* (McNair, Lorr & Droppleman, 1971).

Throughout the day, participants were prompted to enter their level of alertness using the Actiwatch®, which prompted them via a tone to make their ratings at 10:00am, 12:00pm, 2:00pm, and 4:00pm (±10 min). The tone was of sufficient volume to alert the participants to respond. Ratings were made on a 1-10 scale, where 1 indicates not alert and 10 indicates completely alert. Participants returned the ActiWatch® at some point after their 4:00pm alertness rating, during which time their data were loaded into the analysis software.

## RESULTS

Unless otherwise noted, the variables were subjected to a repeated measures ANOVA, with Tukey HSD post-hoc contrasts when indicated. See Table 1 for means and standard errors for the test variables among the odorant conditions.

### Objective Sleep Measures

A significant effect was found for sleep efficiency, $F_{(2,36)}=5.99$, $p<.01$. Sleep efficiency in the jasmine condition was greater than both the control and lavender conditions.

A significant effect was found for the total number of minutes spent moving during sleep, $F_{(2,36)}=7.34$, $p<.01$. Participants spent fewer minutes moving in the jasmine condition than both the control and lavender conditions. The *Movement Fragmentation Index* among the odorant conditions was also significant, $F_{(2,36)}=4.24$, $p<.05$. The jasmine condition score was lower than the control condition.

No differences were found for total sleep time or sleep latency, $F_{(2,36)}=.50$ and 1.41, respectively, $p>.05$.

TABLE 1 Means and Standard Errors for the Measures Among the Odor Conditions

| MEASURE | CONTROL | JASMINE | LAVENDER |
|---|---|---|---|
| Sleep Efficiency | 90.46 (0.90) | 93.40 (0.62) | 90.73 (0.90) |
| D-S Subs. Test (sec) | 75.02 (2.59) | 67.69 (2.38) | 69.79 (2.66) |
| Total Sleep Time (min) | 464.96 (7.12) | 464.42 (12.61) | 454.26 (10.95) |
| Sleep Latency (min) | 24.70 (2.74) | 26.69 (2.42) | 29.11 (2.76) |
| Total Minutes Moving | 27.57 (1.58) | 20.92 (1.90) | 25.97 (1.84) |
| M F Index | 9.45 (0.55) | 7.17 (0.80) | 8.51 (0.82) |
| POMS Anxiety (mean) | 4.75 (0.41) | 2.85 (0.80) | 4.55 (0.68) |
| POMS Vigor (mean) | 15.30 (1.21) | 12.65 (1.26) | 11.25 (1.28) |
| POMS Fatigue (mean) | 4.90 (0.76) | 3.90 (0.95) | 5.65 (0.81) |

### Cognitive Performance

A significant effect was found for the amount of time required of the participants to complete the Digit-Symbol Substitution Test, $F_{(2,38)}=3.45$, $p<.05$. The test was completed more quickly after sleeping in the jasmine condition than the control condition.

### Mood

A significant effect was found for the POMS anxiety sub-scale, $F_{(2,38)}=3.73$, $p<.05$. Level of anxiety in the jasmine condition was less than both the lavender and control conditions.

A significant effect was found for the POMS vigor sub-scale, $F_{(2,38}=4.93$, $p<.05$. Level of vigor in both the jasmine and lavender conditions was less than the control condition.

No differences were found among the conditions for the POMS fatigue sub-scale, $F_{(2,38)}=1.61$, $p>.05$.

**Alertness**

The alertness scores were subjected to a two-within (odor condition and scores over time throughout the day) ANOVA. No significant effect was found for odor condition, $F_{(2,36)}=2.20$, $p>.05$. A significant effect was found for scores over time throughout the day, $F_{(3,54)}=3.87$, $p<.05$. In general, there was an increase in alertness from the first recording of the day (10:00am) to the second (12:00pm). Finally, there was a significant interaction between odor condition and scores over time throughout the day, $F_{(6,108)}=2.24$, $p<.05$. Those who slept in the control condition showed a decline in alertness during the second half of the day, while those who slept in the jasmine condition showed an increase in alertness during the second half of the day (see Figure 1).

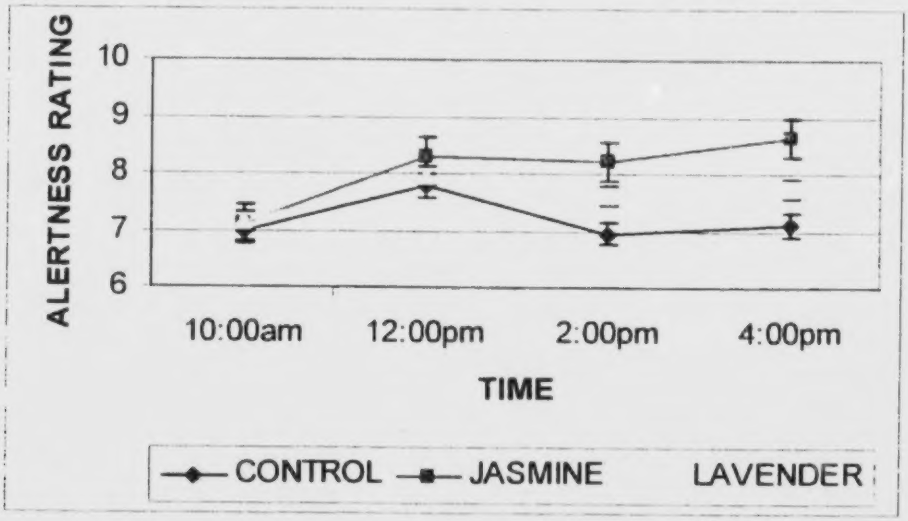

FIGURE 1 Interaction of odor condition and alertness scores over time.

## DISCUSSION

The present study investigated whether the administration of an odorant during sleep affects sleep patterns during the night, cognitive functioning and mood the following morning, and alertness throughout the day. Some type of sleep deprivation (typically in the form of non-clinical insomnia) affects approximately one-third of the total population (Sharpley, Attenburrow & Cowen, 1997). Thus, in an age when a poor night of sleep is frequently reported, which may have further implications on mood, cognitive functioning, and alertness throughout the next day, it is important to assess non-pharmacological adjunct techniques that might help assure a good night's rest.

In comparison to the non-odor control condition, jasmine odor administration led to greater sleep efficiency and reduced sleep movement, although there was no difference in the total amount of sleep. Thus, participants were experiencing an increase in sleep quality, without the need for additional sleep time. Past research has indicated that odors have widespread effects on the human central nervous system (Kobal & Hummel, 1988; Lorig & Schwartz, 1988; Van Toller, 1988; Yagyu, 1994), even when the participant is unaware that an odor is being administered (Lorig, Huffman, DeMartino & DeMarco, 1991). Further, Badia, Wesensten, Lammers, Culpepper, and Harsh (1991) found that the human body can respond to odors presented during sleep. The present findings provide additional support that an odor presented during sleep can have marked effects on sleep behavior. Future studies should address specific EEG/EOG/EMG activity accompanying odorant administration.

While lavender odor was successful at elevating mood, no other lavender effects were found, despite both jasmine and lavender sharing several of the same psychophysical (intensity, pleasantness) and psychological (relaxing) properties. Future research should address the specificity of particular odorants to produce the same effects as those noted in the present study. It is unlikely that jasmine is the only odorant which will modulate the sleep response, and, in fact, certain odors (particularly those which are hedonically unpleasant) may actually interfere with a person's ability to have a restful night of sleep.

Upon awakening, participants in the jasmine condition rated their level of anxiety and vigor lower, and performed the cognitive test more rapidly. Rottman (1989) also found that jasmine odor enhances cognitive task performance, in addition to increasing interest and motivation in such tasks. Students may find this outcome particularly helpful, as they are frequently required to engage in mentally demanding tasks throughout the day. Athletes, as well, may benefit from a jasmine scented bedroom. Savis, Eliot, Gansneder, and Rotella (1997) report that athletes have a significant decrease in hours of sleep one and two nights before competition, due to being excited, eager, or anxious. Sleeping in a jasmine scented room may help to alleviate some of an athlete's anxiety before a competition. However, it should be noted that vigor levels were lower in the morning (most likely a consequence of increased relaxation and reduction in anxiety), and that level of alertness in the jasmine condition was not greater than the control condition until the afternoon hours. Thus, athletes should be cautious of utilizing this technique with early morning competitions.

More generally, however, there are numerous occupations where a poor night's sleep could have potentially disastrous effects, such as physician, air traffic controller, pilot, and long-haul driver. For example, driving over long periods of time has produced visual tracking and driving speed variations of the same magnitude as 0.08 blood alcohol concentration (Arnedt, Wilde, Munt, & McLean, 2001; Lenne, Triggs, & Redman, 1998) and a safety-critical decline in lane-keeping performance (Fairclough & Graham, 1999). A Gallup poll conducted for the National Sleep Foundation reported that 31% of adults said they had fallen asleep at the wheel. Such detrimental effects are even more pronounced for those individuals whose profession is driving, with research showing that one out of four truck drivers' self-ratings of fatigue are in the "tired" range, with 24% of such drivers failing a simple psychomotor performance test (Charlton & Bass, 2001). In the year 2000, there were 5,362 truck-driver related fatalities, with approximately 800 of those fatalities being related to driver fatigue. The ability to produce a more rested driver should be of interest to automobile manufacturers, departments of transportation, long-haul trucking firms, and insurance companies.

Further extensions may also serve an important function within a hospital setting, in the hope of minimizing the stress associated with hospital stays, while at the same time providing the patient with restful sleep. In addition, while the present study was performed using participants from a non-clinical sample, the potential to improve quality of sleep in sleep-disordered individuals is indicated.

## REFERENCES

Agnew, H. W., Jr., Webb, W. B., & Williams, R. L. (1966). The first night effect: An EEG study of sleep. *Psychophysiology, 2*, 263-266.

Arnedt, J. T., Wilde, G. J. S., Munt, P. W., & MacLean, A. W. (2001). How do prolonged wakefulness and alcohol compare in the decrements they produce on a stimulated driving task? *Accident Analysis and Prevention, 33*, 337-344.

Badia, P., Wesensten, N., Lammers, W., Culpepper, J. & Harsh, J. (1990). Responsiveness to olfactory stimuli presented during sleep. *Physiology & Behavior, 48*, 87-90.

Browman, C. P. & Cartwright, R. D. (1980). The first-night effect on sleep and dreams. *Biological Psychiatry, 15*, 809-812.

Charlton, S. G. & Bass, P. H. (2001). Fatigue, work-rest cycles, and psychomotor performance of New Zealand truck drivers. *New Zealand Journal of Psychology, 30*, 32-39.

Coble, P., McPartland, R. J., Silva, W. J., & Kupfer, D. J. (1974). Is there a first night effect? (A revisit). *Biological Psychiatry, 9*, 215-219.

Dember, W. N., Warm, J. S., & Parasuraman, R. (1996). Olfactory stimulation and sustained attention. In A. Gilbert (Ed.), *Compendium of Olfactory Research*. pp. 39-46. Dubuque, IA: Kendall/Hunt.

Dement, W. C., Seidel, W. & Carskadon, M. A. (1982). Daytime alertness.

insomnia, and benzodiazepines. *Sleep, 5*, S28-S45.

Fairclough, S. H. & Graham, R. (1999). Impairment of driving caused by sleep deprivation or alcohol: A comparative study. *Human Factors, 41*, 118-128.

Gilbert, A. N. (Ed.) (1995). *Compendium of Olfactory Research: 1982-1994*. Dubuque, IA: Kendall/Hunt.

Hensford, C., MacLaughlin, V., Wilkinson, D., Tosenvinge, H., Holmes, C. & Hopkins, W. (2002). Lavender oil as a treatment for agitated behaviour in severe dementia: A placebo controlled study. *International Journal of Geriatric Psychiatry, 17*, 305-308.

Harrison, Y. & Horne, J. A. (1999). One night of sleep loss impairs innovative thinking and flexible decision making. *Organizational Behavior & Human Decision Processes, 78*, 128-145.

Heuer, H., Spijkers, W., Kiesswetter, E., & Schmidtke, V. (1998). Effects of sleep loss, time of day, and extended mental work on implicit and explicit learning of sequences. *Journal of Experimental Psychology: Applied, 4*, 139-162.

Jones, K. S., Ruhl, R. L., Warm, J. S. & Dember, W. N. (1999). Olfaction and vigilance: The role of hedonic value. In M. W. Scerbo & M. Mouloua (Eds.), *Automation Technology and Human Performance: Current Research and Trends*. London: Erlbaum.

Kobal, G. & Hummel, C. (1989). Cerebral chemosensory evoked potentials elicited by chemical stimulation of the human olfactory and respiratory nasal mucosa. *Electroencephalography and Clinical Neurophysiology, 71*, 241-250.

Knasko, S. C. (1992). Ambient odor's effect on creativity, mood, and perceived health. *Chemical Senses, 17*, 27-35.

Knasko, S. C., Gilbert, A. N. & Sabini, J. (1990). Emotional state, physical well-being, and performance in the presence of feigned ambient odor. *Journal of Applied Social Psychology, 20*, 1345-1357.

Lenne, M. G., Triggs, T. J., & Redman, J. R. (1998). Interactive effects of sleep deprivation, time of day, and driving experience on a driving task. *Sleep, 21*, 38-44.

Lorig, T. (Ed). (2001). *Compendium of Olfactory Research: 1994-2000*. New York, NY: Kendall/Hunt.

Lorig, T. S. & Schwartz, G. E. (1988). Brain and odor I. Alternation of human EEG by odor administration. *Psychobiology, 16*, 281-284.

Lutz, S. (1991). The effect of relaxation training on sleep, state anxiety, and sick call in a jail population. *Journal of Prison & Jail Health, 9*, 55-71.

McLeod, D. R., Griffiths, R. R., Bigelow, G. E., & Yingling, J. (1982). An automated version of the digit symbol substitution test (DSST). *Behavior Research Methods, Instruments & Computers, 14*, 463-466.

McNair, D.M., Lorr, M., Droppleman, L.F. (1971). *Profile of Mood States*. San Diego, CA: Educational and Industrial Testing Service.

Pilcher, J. J. & Huffcutt, A. J. (1996). Effects of sleep deprivation on performance: A meta-analysis. *Sleep, 19*, 318-326.

Pilcher, J. J. & Walters, A. S. (1997). How sleep deprivation affects psychological variables related to college students' cognitive performance. *Journal of American College Health, 46*, 121-126.

Randazzo, A. C., Muehlbach, M. J., Schweitzer, P. K., & Walsh, J. K. (1998). Cognitive function following acute sleep restriction in children ages 10-14. *Sleep, 21*, 861-868.

Raudenbush, B., Corley, N. & Eppich, W. (2001). Enhancing athletic performance through the administration of peppermint odor. *Journal of Sport and Exercise Psychology, 23*, 156-160.

Raudenbush, B., Koon, J., Meyer, B., Corley, N. & Flower, N. Modulation of pain threshold, pain tolerance, mood, workload, anxiety, and physiological stress measurements through odorant administration. *European Journal of Pain*, in press.

Raudenbush, B., Meyer, B. & Eppich, W. (2002). The effects of odors on objective and subjective measures of athletic performance. *International Sports Journal, 6*, 14-26.

Romine, I. J., Bush, A. M. & Geist, C. R. (1999). Lavender aromatherapy in recovery from exercise. *Perceptual & Motor Skills, 88*, 756-758

Rottman, T. R. (1989). The effects of ambient odor on the cognitive performance, mood, and activation, of low and high impulsive individuals in a naturally arousing situation. *Doctoral Dissertation.*

Savis, J. C., Eliot, J. F., Gansneder, B. & Rotella, R. J. (1997). A subjective means of assessing college athletes' sleep: A modification of the Morningness/Eveningness Questionnaire. *International Journal of Sport Psychology, 28*, 157-171.

Sharpley, A. L., Attenburrow, M. E. J. & Cowen, P. J. (1997). Assessment and treatment of insomnia (including a case control study of patients with Primary Insomnia). *International Journal of Psychiatry in Clinical Practice, 1*, 107-117.

Van Toller, C. (1988). Emotion and the brain. In Van Toller, C. & Dodd, G. (eds.), *Perfumery: The Psychology and Biology of Fragrance*. London: Chapman Hall, pp. 121-146.

Warm, J. S., Dember, W. N. & Parasuraman, R. (1991). Effects of olfactory stimulation on performance and stress in a visual sustained attention task. *Journal of the Society of Cosmetic Chemists, 42*, 199-210.

Wolfson, A. R. & Carskadon, M. A. (1988). Sleep schedules and daytime functioning in adolescents. *Child Development, 69*, 875-887.

Yagyu, T. (1994). Neurophysiological findings on the effects of fragrance: Lavender and jasmine. *Integrative Psychiatry, 10*, 62-67.

Yotsuya, Y., Motomura, N., & Sakurai, A. (2001). Reduction of mental stress with lavender odorant. *Perceptual and Motor Skills, 93*, 713-718.

---

*Note*: This research was funded by a grant from the National Science Foundation (BCS-0115624) and the National Aeronautics and Space Administration to B. Raudenbush.

# Unrealistic Optimism and School Violence Prevention Programs

John Chapin
*Penn State University*

Grace Coleman
*Crisis Center North*

The study assesses the impact of optimistic bias, a health psychology theory, on a school violence prevention program through a survey of 1,500 middle and high school students. This is the first study of optimistic bias within the school violence context and its curriculum. Despite high profile school shootings, students maintain the belief that violence is less likely to happen to them (personally) or in their schools (globally), than elsewhere in the country. Findings indicate that optimistic bias can be reduced through educational campaigns and suggest a means of reducing violence by first reducing optimistic bias.

News reports of a 2001 school shooting in New Mexico revealed that over 20 students knew their peer intended to take a gun to school. None of the students believed it could happen in their school. They failed to take precautions; they went to school; they didn't report the threats to anyone; people died.

Because people act on their misperceptions, optimistic bias (Weinstein, 1980) provides a promising conceptual framework for understanding school violence. In lay terms, optimistic bias refers to the perception that "bad things happen to other people, but not to me" (Weinstein, 1980). Recognizing and reducing optimistic bias regarding violence at school is a vital first step in getting students to understand their personal risk, take other's threats seriously, and take self-protective measures when warranted.

The current study examines the success of the violence awareness campaign of Crisis Center North (Pittsburgh, PA), a non-profit domestic violence center. The campaign is the first of its type in the country to incorporate optimistic bias into its design and curriculum as a theory-based approach intended to reduce violence by raising awareness and reducing optimistic bias. A clinical psychologist administered programs as one-week sessions in middle schools and high schools. In addition to date rape, school, and youth violence awareness, the programs addressed

---

*Author info:* Correspondence should be sent to: Dr. John Chapin, Penn State U., 100 University Drive, Monaca, PA. 15061.

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 193-202.
© NAJP

students' optimistic bias through teen speakers (like them) in the classroom and on videotape. Statistics and warning signs were personalized in an attempt to reduce the perceptual bias that "it can't happen here."

This case study serves several broad purposes related to understanding student perceptions of school violence. (a) It seeks to document optimistic bias among middle school and high school students. It is the first to apply the concept of optimistic bias within the school violence context. (b) It is also the first to assess the success of an educational campaign on increasing violence awareness and lowering optimistic bias. (c) It also investigates the impact of violence awareness on perceptions of media violence.

Over 100 published studies from the past two decades have documented optimistic bias in a variety of health-related contexts, many representative of youth risk-taking, like alcohol abuse (Job, Fleming & Morgan, 1992; Miller, 1991), smoking (Arnett, 2000; Hampson, Andrews, Lee, Foster & Glasgow, 1998), HIV/AIDS (Chapin, 2000; Ferguson, 1997), and unplanned pregnancy (Chapin, 1999; Chapin, 2001). In each case, participants were asked to make comparative risk judgments between themselves and target others. Chapin (2001) found that minority middle school and high school students believed they were less likely than were other students their age in the U.S. to suffer an unplanned pregnancy as a result of risky sexual activity. This optimistic bias was linked to sexual attitudes, intentions, and activity, with a mean age of sexual initiation of 12. The study suggested a course of action of reducing sexual risk-taking by reducing optimistic bias. Because the study was based on an existing program with a set curriculum, it was unable to test the key assumption. The current study furthers the findings by integrating optimistic bias into the curriculum before conducting the research. It is unclear if participants in optimistic bias studies overestimate the risk of others or underestimate their own risks. Because people act on their misperceptions, optimistic bias (Weinstein, 1980) provides a promising conceptual framework for understanding school violence. Recognizing and reducing optimistic bias regarding violence at school is a vital first step in getting students to understand their personal risk, take other's threats seriously, and take self-protective measures.

Only two previous studies applied optimistic bias to violence. Miller (1991) reported a link between parents' optimism about controlling alcohol abuse and increased child abuse. More recently, Martin et al. (2000) studied 70 women in abusive relationships and concluded that the women exhibited optimistic bias, comparing themselves to others in more violent relationships. Higher degrees of optimism also predicted the likelihood that the women would return to their abusive partners. While two studies are not enough to dictate a course of action, both suggest applications of the theory that could reduce violence by having people in violent situations take self-protective measures (i.e. leaving an abusive relationship or recognizing and seeking help for substance abuse). The current study is the first to study optimistic bias in the context of school violence. Despite the robustness of the literature, studies largely fail to identify underlying mechanisms. One area that has received recent attention is knowledge. Does knowing about risks curb risky behaviors?

Instead of discouraging risky behaviors, knowledge (specific to the research context) gained through personal experience or vicarious experience tends to have the opposite effect on optimistic bias (Frewer, Howard, Hedderley & Shepherd, 1998; Weinstein, Lyon, Rothman & Cuite, 2000). Frewer and colleagues (1998) studied 908 adults in the United Kingdom regarding food hazards as a public health threat, finding that knowledge of food hazards or perceived knowledge (whether or not they were accurate) increased optimistic bias. Armed with broad knowledge of a subject, individuals seem to believe they are less vulnerable to harm. A second area that should logically hinder risky behaviors is self-esteem. Like knowledge, self-esteem may also reinforce the misperception that one is less vulnerable to harm.

Self-esteem plays an important role in the formation and preservation of optimistic bias (Chapin, 2000; Smith, Gerrard & Gibbons, 1997). The relationship between optimistic bias and self-esteem is a complex one: (a) Individuals tend to engage in downward social comparisons, comparing themselves to people at elevated degrees of risk, and (b) failure to avoid a hazard only threatens self-esteem if the hazard is controllable (Weinstein, 1987).

While direct experience, knowledge and self-esteem receive some attention from scholars, the literature has yet to consider vicarious experience through the media.

That adolescents are exposed to vast amounts of information via the media is inarguable. Beyond mere exposure, media studies have much to offer this literature. Two areas merit consideration here: third-person perception and perceived media reality.

Similar to optimistic bias, third-person perception predicts an optimistic perceptual bias regarding negative effects, in this case via media exposure. The third- person perception hypothesis predicts that individuals believe the greatest influence of the media is not on themselves (the first person), or people they know well (the second persons), but on distant others (the third persons). While some studies have suggested a relationship between optimistic bias and third person perception (Brosius & Engel, 1996; Duck and Mullin, 1995), only two (Chapin, 2000;Chapin, 2001) tested the relationship using optimistic bias and third person perception measures. Chapin (2001) studied 180 urban minority youth and their optimistic bias regarding multiple hazards (being hurt in an accident, cancer, alcohol addiction, violent crime, unplanned pregnancy, and HIV/AIDS infection), reporting a positive relationship between optimistic bias and third-person perception: i.e. individuals who believed they were not influenced by media depictions of risky sexual behavior, also believed they were less likely than others to be involved in an unplanned pregnancy or contract AIDS as a result of their own risky sexual activities. Chapin also reported a small, but significant relationship between optimistic misperceptions and risky sexual behaviors. Including vicarious learning through the media is important in that it may help explain how optimistic biases are formed in the absence of personal experience.

Drawing from the third-person perception literature, it seems to be the case that mere exposure to the media is not sufficient to create optimistic biases regarding media effects: adolescents must believe what they are viewing is realistic and credible to be most influenced by it (Busselle & Greenberg, 2000; Gunther & Thorson, 1992). Busselle and Greenberg (2000) reviewed 30 years of the perceived media reality literature, linking it with acceptance of violent depictions, attitudes toward violence, and increased aggression, particularly among children. A critique of the studies reviewed is that they assumed participants' perceptions of media reality by exposure to messages constructed (by adults) to be either realistic or unrealistic. The current study addresses the critique by measuring perceived media reality.

Based on program goals and the literature reviewed, the following hypotheses were tested.

*H*1: Exposure to the program will increase violence awareness knowledge.
*H*2: As knowledge increases, self-esteem will increase.
*H*3: As knowledge increases, third-person perception will increase.
*H*4: As knowledge increases, the perception that media depictions of violence are realistic will decrease.
*H*5: As knowledge increases, optimistic bias will decrease.
*H*6: Exposure to the program will decrease optimistic bias.

## METHOD

### Participants

The students who participated in this study attended grades 7 through 12 in public and private schools in Allegheny County (Pittsburgh area) Pennsylvania (*N* = 1,508). As per stipulations of participating schools, students did not provide any identifying information. Thus, gender and age were not recorded on individual surveys. From staff head-counts and session notes, the overall group was 54% female. Because surveys were conducted in classes, grade level could be passively recorded. The sample was evenly split between high school and middle school students (*M* = 9th grade, *SD* = 1.9), although some grades were less represented: 7th grade = 21.9 percent, 8th = 33.1 percent, 9th = 8.3 percent, 11th = 19.4 percent, 12th = 16.3 percent. Of the 62 school districts in Allegheny County, 12 are serviced by Crisis Center North (CCN), one of five local non-profit women's centers in the county. Of the 24 middle schools and high schools eligible for CCN's violence awareness programs, 15 (62.5%) participate annually. All students exposed to the CCN violence programs were included in the study. Both urban and suburban schools are in the region. The only discernable difference between the 15 participating schools and the 9 non-participating schools is that private schools are less likely to participate than public schools. Both the Office of Regulatory Compliance of the university and the CCN board approved the study for human subjects prior to any data collection. Schools could also opt not to allow pre/post testing. None did, but most stipulated that identifying information could not be included on individual surveys to insure anonymity. This limited demographic analysis.

Survey data were integrated into the center's pre/post tests and program evaluations by a clinical psychologist. Programs took place in school during regular hours with teachers present. They were one week in duration. Student absenteeism resulted in incomplete data for some participants. Missing data points were eliminated pair-wise, with all analyses being based on at least 1,000 participants.

### Measures

*Knowledge* Knowledge of school violence (school, youth and dating violence) was measured with five items on a Likert-type scale created by center counseling staff: "Violence affects only a tiny percentage of high school students" (agree a lot = 5; disagree a lot = 1). The scale exhibited moderate internal consistency ($\alpha = .54$). The same measure was repeated as a post-test at the conclusion of the program. All items were combined to measure knowledge for correlational analysis.

*Optimistic bias* Optimistic bias was measured using a standard instrument (Weinstein, 1980), which asked students to estimate their chances experiencing personal or global school violence (being a victim of school violence, the likelihood of violence in their school): "Compared to other schools in the U.S., the chance of violent outbursts in my school are:" (much less = -3, about the same = 0, much greater = 3). In order to assess changes in optimistic bias as a result of the program, the school violence item was repeated in the post-test.

*Self-Esteem:* Self-esteem was measured with the *Rosenberg* scale. a well-established 10-item Likert-type scale with a four-point scale (strongly agree = 1: strongly disagree = 4): "I feel I have a number of good qualities. The 10 items were combined to create a scale of self-esteem. The scale exhibited high internal consistency ($\alpha = .83$).

*Third-Person Perception*: Various established procedures for measuring third-person perception appear throughout the literature. The measure in this study was adapted from Duck and Mullin (1995), substituting questions about media violence for Duck and Mullin's questions regarding drinking and driving PSAs. Following a discussion of violence in the media, students responded to the following: "How much do you think _____ (YOU/OTHER students your age in the U.S.) are influenced by violence on TV?" Responses were in the form of Likert-type scales (1 = not at all: 7 = extremely influenced). Self/Other distinctions were measured by subtracting "other" ratings from "self" ratings.

*Media Reality:* Perceived media reality was measured using a scale developed by Greenberg, Tokinoya, Ku and Li (1989) for adolescents. Participants responded to four items on a five-point scale: "Fighting on TV is like fighting in real life" (5 = agree a lot: 1 = disagree a lot). The scale exhibited high internal consistency ($\alpha = .83$).

## RESULTS

Student evaluations of the programs were overwhelmingly positive (*M* = 4.17. *SD* = .62, range = 1-5). Written comments emphasized the importance of the information and student interest.

*H*1 predicted that exposure to the program would increase school/youth violence knowledge. Center staff was surprised by the degree of knowledge exhibited on pre-tests. On a scale ranging from one to five. the mean score was 3.9 (*SD* = .64). Students correctly answered 78 percent of the items before the program began. Despite the high starting point. post-test scores (*M* = 4.1. *SD* = .64) were significantly higher than pre-test scores. $t_{(1040)} = 6.79$. $p < .000$. *H*1 was supported. Based on the high benchmarks and moderate internal consistency. new scales have been developed for subsequent programs.

The relationship between knowledge. self-esteem. media perceptions. third-person perception and optimistic bias are summarized in Table 1. *H*2 predicted that self-esteem would increase as knowledge increased. This hypothesis was not supported.

*H*3 predicted that third-person perception would decrease as knowledge increased. Because perceived influence of media violence was greater for others (*M* = 4.52. *SD* = 1.5) than for self (*M* = 2.88. *SD* = 1.7). it can be said that the group exhibited classic third-person perception. About half of the students (49.9 percent) believed media violence has little impact on themselves, but great influence on others. Table 1 shows a small inverse relationship between knowledge and third-person perception. *H3* was supported. Given the high degrees of knowledge reflected in pre-test scores, this finding is consistent with the literature.

*H4* predicted that perceived media reality would decrease as knowledge increased. Most of the students (61.8 percent) fell on the lower end of the scale, rating media depictions as unrealistic. This is not surprising, given the high degrees of knowledge exhibited on the pre-test. Table 1 shows the predicted relationship not only emerged, but perceived media reality was more strongly related to knowledge than any other variable, thus showing support for *H4*.

TABLE 1 Zero-order Correlations Among Knowledge, Optimistic Bias, Self-esteem, and Media Perceptions

| | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Violence Knowledge | -.32*** | .19** | .13* | -.12* | .09 |
| Perc. Media Reality | — | .02 | .05 | .08 | -.03 |
| OB School | | --- | .12*** | .04 | -.05 |
| OB Victim | | | --- | .03 | -.00 |
| Third-Person Perception | | | | — | .11 |
| Self-Esteem | | | | | --- |

*Note*. Optimistic bias is measured by a negative mean, so signs must be reversed for interpretation of columns 3 & 4.
*$p < .05$, **$p < .01$, ***$p < .001$

*H5* predicted that optimistic bias would decrease as knowledge increased. Optimistic bias is demonstrated by a group mean significantly less than zero, on a scale ranging from –3 to +3. Given the recent media attention to school shootings nationwide and a high profile local shooting spree, half the students (54.9 percent) saw no difference in their chances of becoming the victim of violence compared to other students around the Country; 28.1 percent believed they were less vulnerable to school violence. A single sample *t*-test was used to test the hypothesis that the mean of optimism was significantly different from zero. Students believed they were less likely than others to become the victims of violence in school, $t_{(1502)} = -7.9$, $p < .000$. Similarly, most students (60.9 percent) believed chances of violence in their school environments was at least as likely in other schools around the Country; 23.3 percent believed violence was not likely to happen in their school, $t_{(1460)} = -5.7$, $p < 000$. Because the means are less than zero, the term "optimistic bias" will be used to describe self vs. other comparisons in the cases of personal victimization and school violence.

Table 1 indicates that for both personal and global (school) violence, knowledge decreases optimistic bias (Signs are reversed for interpretation because optimistic bias is indicated by a negative mean). *H5* was supported. This finding is consistent with the literature.

The repeat of the school violence item indicates that, as predicted in H6, optimistic bias decreased from the pre-test ($M = -.16$, $SD = 1.1$) to the post-test ($M = -.03$, $SD = 1.3$), following exposure to the program, thus supporting *H6*. This finding is consistent with the literature. Despite the gain toward the positive, the group still exhibited slight optimistic bias, believing violence was less likely to happen in their school than in other schools around the country.

## DISCUSSION

The case study documents the success of a school violence awareness/prevention campaign. Students enjoyed and participated in the presentations, believed they were important, and gained knowledge. A cooperative effort of a non-profit domestic violence center, a major university, a philanthropic foundation and local schools, the program offers an effective model for communities to come together for a worthy cause: decreasing school/youth violence.

Consistent with findings in other research contexts, optimistic bias was evident regarding school violence. Following the intervention, a significant reduction in optimistic bias was found nearing the zero point (indicating no bias as a group). This indicates the success of using a theory-based approach in reducing bias.

Knowledge of a subject area frequently increased optimistic bias, leading many to the conclusion that a little knowledge is a dangerous thing. The perfect example lies in early efforts to increase awareness of AIDS. Campaigns focused on the three high risk groups: homosexual men, IV drug users and Haitians. People who didn't fall into one of the groups used their "little bit of knowledge" to place themselves at reduced risk and failed to take precautions. Crisis Center North coupled knowledge of school violence with peer testimonials (If it can happen to me, it can happen to you). Students still seemed to distance themselves from personal violence, but were more likely to acknowledge the possibility of violence in their school. If this reduction in optimistic bias fails to reduce violence it may at least encourage students to take self-protective measures when threats are issued or warning signs emerge among their peers.

The study also begins to establish a link between school violence, knowledge and violent media. Students who exhibit third-person perception, believing they are less influenced than others by violent media, continue to consume such media without caution. It is positive that most students accurately perceive media portrayals as unrealistic. The adolescents who knew the most about real school violence were the least likely to perceive media violence as realistic. School-based media literacy programs may go a long way in continuing this progress.

The current study represents a cooperative agreement between a university and a non-profit agency. Limited space was available on pre-post tests for study variables, so multiple relationships and potential alternative explanations could not be explored in depth: (a) Optimistic bias routinely varies according to the social desirability of the target hazard. (b) Cognitive dissonance may also explain why an adolescent accepts school violence as reality, but fails to take precautions. (c) The adolescent invulnerability literature also has much to offer here. Such alternative explanations may be included in follow-ups to the current study or in other investigations.

Counselor constructed instruments (knowledge) served their intended primary purpose for the Center, but exhibited only moderate internal consistency for research purposes. Follow-up studies currently underway may be able to address these limitations.

Similarly, case study limits generalizability to other programs with different populations and different curriculum.

## REFERENCES

Arnett, J. (2000). Optimistic bias in adolescent and adult smokers. *Addictive Behaviors, 25* (4), 625-632.

Brosius, H. & Engel, D. (1996). The causes of 3rd person effects: Unrealistic optimism, impersonal impact, or generalized negative attitudes towards media influence. *International Journal of Public Opinion Research, 8* (2), 142-162.

Busselle, R. & Greenberg, B. (2000). The nature of television realism judgments: A reevaluation of their conceptualization and measurement. *Mass Communication and Society 3*(2&3), 249-268.

Chapin, J. (2001). It won't happen to me: The role of optimistic bias in African-American teens' risky sexual practices. *Howard Journal of Communications, 12*, 49-59.

Chapin, J. (2000). Third-person perception and optimistic bias among urban minority at-risk youth. *Communication Research* 27 (1), 51-81.

Chapin, J. (1999). Third-person perception and sexual risk-taking among minority "at-risk" youth. *Mass Communication and Society* 2 (3/4), 163-173.

Duck, J. & Mullin, B. (1995). The perceived impact of the mass media: reconsidering the third-person effect. *European Journal of Social Psychology 25*, 77-93.

Ferguson, E. (1997). HIV/AIDS knowledge and HIV/AIDS risk perception: An indirect relationship. *Work & Stress 11*(2), 103-117.

Frewer, L., Howard, C., Hedderley, D., Shepherd, R. (1998). Methodological approaches to assessing risk perceptions associated with food-related hazards, *Risk Analysis, 18*(1), 95-102.

Gunther, A. & Thorson, E. (1992). Perceived persuasive effects of product commercials and public service announcements: Third-person effects in new domains. *Communication Research 19*(5), 574-596.

Hampson, S., Andrews, J., Lee, M., Foster, L., Glasgow, R., & Lichtenstien, E. (1998). Lay understating of synergistic risk: The case of radon and cigarette smoking, *Risk Analysis, 18*(3), 343-350.

Job, R., Fleming, E. & Morgan, G. (1992). The effects of age on unrealistic optimism about driving and road safety, *International Journal of Psychology 27*, 627-628.

Martin, A., Berenson, K., Griffing, S., Sage, R., Madry, L., Bingham, L. & Primm, B. (2000). The process of leaving an abusive relationship: The role of risk assessments and decision-certainty. *Journal of Family Violence, 15*(2), 109-122.

Miller, C. (1991). Risk perception: An investigation of its accuracy and impact. *Dissertation Abstracts International, 52* (01B), 523.

Smith, G., Gerrard, M. & Gibbons, F. (1997). Self-esteem and the relation between risk behavior and perceptions of vulnerability to unplanned pregnancy in college women. *Health Psychology, 16*(2), 137-146.

Weinstein, N. (1987). Unrealistic optimism about susceptibility to health problems: Conclusions from a community-wide sample. *Journal of Behavioral Medicine, 10*(5), 19-37.

Weinstein, N. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology, 39*, 806-460.

Weinstein, N. & Lyon, J. (1999). Mindset, optimistic bias about personal risk and health-protective behavior. *British Journal of Health Psychology, 4*, 289-300.

---

*Acknowledgements*:The authors gratefully acknowledge the contributions of the following to this project: Dr. David Gleason (Wediko Children's Services), David Zabelsky (Penn State University), NAJP blind reviewers and editor. Materials used for the program were partially funded by grants from Pittsburgh's United Jewish Foundation and Target.

# Applications of Behavioral Methods as Treatment for Urinary Incontinence in the Elderly

Mark R. Dixon, Jamie Dennis, Kimberly M. Zlomke, &
Christine Halvey
*Southern Illinois University*

Urinary incontinence (UI) in the elderly is a distressing and costly health concern for both the client and care staff. This paper reviews the general area of incontinence, the problems associated with the condition, along with current non-behavioral and behavioral approaches that merit attention and practical use. The empirically validated techniques such as prompted voiding, habit training, pelvic muscle exercises, and biofeedback may provide an alternative to medication or surgery for a large number of persons suffering from this condition.

The elderly population is increasing daily and is estimated to reach a staggering number by the year 2030. According to the U.S. Department of Health's Administration on Aging (2000), the population of elderly persons grew from 25.7 million in 1980 to 34.8 million in the year 2000. It is estimated that those numbers will escalate to 39.7 in 2010, 53.7 in 2020, and 70.3 in 2030. This is an increase of 35.5 million elderly people between the years 2000 and 2030, which translates into an addition of 1.18 million elderly persons per year. In addition, the Administration on Aging (2000) shows that 52.5 million elderly Americans had some type of disability in 1994-5; 33.4 million of those were severe disabilities, and those numbers will naturally rise as the population does. The need for increased research and care is inherent in these numbers and should cause professionals in every health care field to ask, "Are we well-equipped to deal with the health issues of this rapidly growing population?" and "Do we have treatments that will be effective and efficient?"

There are numerous diseases and symptoms that afflict the elderly, ranging from speech and auditory difficulties to Alzheimer's disease and dementia. One underreported but prevalent health issue in this population is that of urinary incontinence. Although statistics vary, the National Association for Continence (2001) reports that incontinence afflicts an estimated 13 million Americans annually, 50% of whom are elderly. This number is only for those reported cases; incontinence is heavily

---

*Author info*: Correspondence should be sent to: Mark R. Dixon, Ph.D., Behavior Analysis and Therapy Program, Rehabilitation Institute, Southern Illinois University, Carbondale, IL 62901.

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 203-212.
© NAJP

underreported by many elderly due to the social stigma often associated with the condition (Tovian, 1996). Urinary incontinence is both distressful and costly for the elderly burdened with it, as well as those who care for them. There are existing methods of coping with incontinence, but the approach that has received less than mainstream support is behavior analysis. Behavior analysis, a branch of psychology, is the scientific study of human behavior and offers highly effective approaches to a broad range of health issues in various populations.

## WHAT EXACTLY IS INCONTINENCE?

The National Association For Continence (NAFC) defines incontinence as simply "loss of bladder or bowel control ... [it] is a symptom, not a disease (2000)." Incontinence may be caused by a variety of conditions. The NAFC lists the following as causes of incontinence: pelvic surgery, birth defects, neurological diseases, multiple sclerosis, poliomyelitis, infection, injuries to the pelvic region or to the spinal cord, and degenerative changes associated with aging. The five basic types of incontinence - again based on information from the NAFC - are stress incontinence, urge incontinence, overflow incontinence, reflex incontinence, and incontinence from surgery. The first type, stress incontinence, results from damaged pelvic muscles and causes loss of bladder control when pressure is put on the bladder by laughing, coughing, or other muscle movements. The second type, urge incontinence, results when pathways from the bladder to the brain have been damaged, resulting in an urgent unexpected need to urinate. Overflow incontinence, the third type, causes leakage when the amount of urine exceeds the holding capacity of the bladder. The fourth type, reflex incontinence, results in individuals becoming unaware that they need to urinate and often develops when there is a leak in the urethra, ureter, bladder, or when there is an abnormal opening between the bladder and some other body component. The final type of incontinence is a side-effect from surgery, such as rectal, lower intestinal, hysterectomies, prostatectomies, or caesarian sections. Medication, cognitive impairment, and increased immobility can often complicate an existing incontinence condition (Agency for Health Care Policy & Research, 1996).

## PROBLEMS ASSOCIATED WITH INCONTINENCE

Incontinence brings with it more than simple inconvenience for those burdened with it; urinary incontinence is a costly condition to our culture at large. One cost analysis estimated the financial impact of incontinence in the elderly to be approximately $7 billion annually for those persons living in the community, and approximately $3.3 billion annually for those persons residing in nursing homes (Hu et al., 1992). Microanalysis of these data suggest that in the outpatient setting there could be a savings of $105 per incontinence episode avoided, and a savings of $535 per episode in the inpatient setting. The Agency for Health Care Policy and Research (1996) estimated that the United States spends at least $16 billion a year to care for people with urinary incontinence, which is an increase from $10 billion in 1990.

Although urinary incontinence is not often viewed from a financial perspective, perhaps it should be. When potentially successful treatments are not implemented by caregivers, those caregivers are discarding limited financial and staff resources which could be better allocated to providing more optimal care, increasing staffing needs, and designing more inclusive facilities. Lack of awareness about treatment options is costly financially to our culture and psychologically to the elderly individuals we serve (Rehfeldt, Steele, & Dixon, 2000).

The psychological and physical impact of incontinence can be as disturbing as the financial one - if not more so - on the individuals themselves, on their families, and on the providers who care for them. Incontinence often causes depression and embarrassment among those inconvenienced by it, to the extent that their social interactions may diminish as issues like appearance and odor become problematic. The fear of possible public embarrassment by accidents may also limit the activity and socialization of individuals experiencing urinary incontinence. When questioning 199 elderly persons in regard to their perceptions of their own urinary incontinence, Ouslander and Abelson, (1990) discovered that 76% found it to be inconvenient, 70% reported that it was uncomfortable, 62% said it was embarrassing, and 61% responded that it was upsetting. Furthermore, 54% of respondents indicated that their urinary incontinence was serious enough that they would consider having the problem corrected through surgery. Urinary incontinence also contributes to the loss of independence that often results in elderly individuals needing to be transitioned into nursing homes. It is estimated that 50% of the 1.5 million elderly individuals in nursing homes are incontinent (Urinary Incontinence Guideline Panel, 1992). Many psychological changes occur for persons facing this life transition (see Rehfeldt, Steele, & Dixon, 2000), which may be postponed if not altogether avoided with proper treatments in place.

## COMMON NON-BEHAVIORAL TREATMENTS

Common non-behavioral treatments for incontinence include supportive devices, pharmacological treatment, and surgical treatment (Tovian, 1996). Although the use of supportive devices does not treat the incontinence directly, they offer an environmental alteration for the person when other treatments are unavailable or ineffective. Items in the "supportive devices" category include absorbent products, catheters, and penile compression devices (National Association for Continence, 2000). While the physical complications caused by supported devices are relatively minimal (i.e. skin irritations and urinary tract infections), the psychological complications are a little more pronounced. Dependence on supportive devices often detracts from the feeling of independence in the lives of the elderly – something that is often on the decline already.

Pharmacological treatments are another approach in dealing with incontinence, and are considered the most common due to the immediate effect and ease of administration (Resnick, 1998). However, no drug on the market can restore continence to any patient, for when the drugs are withdrawn, the incontinence returns. Frequently used drugs include Oxybutynin (or Ditropan) and Tolterodine (or Detrol) while ongoing debate remains regarding which drug is most effective. Few comparative studies have been performed. Of those that have, it has been claimed that Oxybutynin resulted in fewer episodes of incontinence per day and had fewer side effects, such as dry mouth, than Tolterodine (Blonski, 2001). In addition to these two popular drugs, estrogen is sometimes used to treat postmenopausal women who suffer from urinary incontinence (The Agency for Health Care Policy and Research, 1996). The ease of administration and immediate effects demonstrated by pharmacological treatments come at a price. Health risks increase with age, and with potential drug interactions for those persons taking other prescriptions.

Surgery is also a common treatment for urinary incontinence. However, it is a last resort and the type of surgery used depends on the type of incontinence. The National Association for Continence (2000) lists the following types of surgery as options: bladder neck suspension or sling procedures, collagen injections around the urethra, or implantation of an artificial urinary sphincter or sacral nerve stimulator. With the exception of the sacral nerve stimulator, these surgical procedures strive to cure or decrease incontinence, either by providing bladder and urethra support or by tightening the urethral sphincter (U.S. National Library of Medicine, 2002). By applying continuous stimulation to a nerve root, sacral nerve stimulators change activity in the muscles of the pelvic floor which then result in increased bladder control (Bushman, 2000). While surgical procedures do have a good success rate, they too come with potential unforeseen costs. First, as persons age their ability to recover from surgery often declines (Sgandurra, Cipolat, Petrini, Martinelli, 1998). Second, the decision to carry through with surgery may leave caregivers in an uncomfortable position of needing to weigh the pros and cons of the given procedure and hypothesize about the probability of success or failure. Third, the probabilistic outcome of surgery has a definite financial cost.

## BEHAVIORAL TECHNIQUES

Behavior analysis defines itself as a *scientific* study of human behavior that relies heavily on the generation of empirical data. The applications of behavior analysis have been vast and have aided many different populations including persons with developmental disabilities, autism, mental-illness, chronic pain, children, athletes, business and industry, social services, and the elderly (Miltenberger, 1997). Gerontology, a discipline continuing to grow in size and scope, is receiving more attention from behavior analysts recognizing the emergent needs associated with the elderly population.

The application of behavior analysis for treating UI has effectively served the elderly population for some time. Unfortunately it is not widely known or practiced by many care professionals. As early as 1983, behavior analysts have been attempting to manage geriatric incontinence in nursing homes using prompting procedures. For example, Schnelle et al., (1983) increased accident-free toileting in residents of a nursing home via a four step protocol which included checking the resident's clothing every hour for dryness, prompting them to use the bathroom at that time (e.g., "Mr(s).____, do you need to go to the bathroom?"), providing social approval when a resident was dry (e.g., "Good, you're dry. Isn't that more comfortable?"), and providing social disapproval when the resident was wet (e.g., "I don't understand why you wet yourself and didn't ask for help"). This simple procedure increased correct toileting behavior by 45%.

Burgio and Burgio (1986) proclaimed a call to action on the part of the behavioral community in their review of the various areas in gerontology that could stand to benefit from behavioral research and practical applications. As a result, many empirical studies have followed in the area of incontinence, and as a result many persons who suffered from this disorder were able to lead more inclusive and dignified lives. Studies have included the development of a staff management system for maintaining improvements in incontinence with elderly nursing homes residents using a prompted voiding protocol similar to that listed above (Burgio, et al., 1990), discrimination training whereby the incontinent person becomes more aware of their incontinence status and to request toileting assistance from caregivers. (Tovian, 1996), and prompted voiding protocols teaching family caregivers to perform the prompting at home with their incontinent spouses (Adkins & Mathews, 1997). Some treatments incorporate a form of "bladder training" consisting of educational, scheduled voiding, and positive reinforcement components (e.g. Tovian, 1996).

Habit training, sometimes referred to as "timed voiding," involves scheduling toileting that is planned by the client and/or their caregivers. The purpose is for the individual to stay dry by voiding at regularly scheduled times with the ultimate goal being that the individual becomes so accustomed to the scheduled voiding that he or she performs it without recognition of the schedule. Habit training is similar to prompted voiding in that the person toilets at scheduled times, but the education, monitoring and reinforcement components present in prompted voiding are not present in habit training. Another behavioral technique available involves pelvic muscle exercises, also known as "Kegel exercises." Through exercise of the pubococcygeus muscles, urethral resistance is improved and the voluntary periurethral and pelvic muscles are strengthened (Tovian, 1996). These exercises are performed daily and teach individuals to prevent episodes of incontinence by exerting control of these muscles. Pelvic muscle exercises can be used in isolation or in combination with other therapies, such as biofeedback (National Association for Continence, 2000).

Biofeedback is a technique, while not isolated to behavior analysis, which has seen many of its successes documented in the behavioral literature. Biofeedback is used to measure and alter physiological states, and can be used to treat incontinence as well as various other ailments from back pain to high blood pressure (Association for Applied Psychophysiology and Biofeedback, 2001). Biofeedback measurement for urinary incontinence is conducted primarily through electromyography (EMG) or pressure devices. When EMG is used on an external part of the body, electrodes are attached to an external part of the body (in this case, the abdomen), and muscle tension is measured (Schwartz, 1995). A more accurate method of measurement and treatment, however, is provided through with cystometric feedback. A cystometrogram is a device that measures bladder pressure after water is pumped into the bladder (U.S. National Library of Medicine, 2001) and requires the insertion of vaginal and rectal probes, which measure muscle tension. Readers interested in more detail regarding these procedures should review more detailed biofeedback manuals (e.g., Schwartz, 1995). Often times visual feedback (flashing lights, a moving meter needle, or changing numbers on the device) or audio feedback (beeps or signals produced by the device) inform the person of the intensity of the muscle tension, and he or she consequently learns to control that muscle tension (Schwartz, 1995). Voluntary control of this muscle tension is what prevents urinary leakage from the patient. After treatment, the goal is for individuals to be able to tense and control those muscles without being hooked up to the biofeedback devices at all (Association for Applied Psychophysiology ad Biofeedback, 2001). Although the EMG probes can be considered intrusive, they can still provide effective treatment without many of the risks associated with medication or surgery. Furthermore, the probes are for temporary use, present only until the individual learns to control their muscles independently. If an individual prefers a more natural alternative to controlling incontinence, biofeedback can be a highly preferred method.

Biofeedback researchers have been investigating urinary incontinence muscle control procedures since the 1960s. Many studies continue to be published highlighting the possibilities for persons not suffering from a neurologically caused form of incontinence. For example, Susset, Galea, & Read (1990) used intravaginal pressure biofeedback to improve muscle contractions in 15 females. Eighty percent of them reported 100% improvement, and the remaining subjects reported 25-75% improvement. Additionally, 75% of the participants who reported complete improvement reported no recurring episodes of incontinence. Another study by Burgio et al. (1985) utilized manometric feedback (a manometer is simply a type of pressure gauge) for participants having a number of different forms of incontinence (urge, overflow, etc.) Regardless of type, reductions of accidents ranged from 81-95%. The Agency for Health Care Policy and Research cite that various investigations on the use of biofeedback combined with other behavioral approaches to the treatment of IU (prompted voiding, habit reversal) present a range of improvement for 54-87% in elderly inpatients (AHCPR, 1996).

Comparisons have also been made between a behaviorally-based biofeedback form of intervention and pharmaceutically-based form of intervention. For example, Burgio et al. (1988) compared a treatment package consisting of feedback, "urge strategies," and pelvic muscle biofeedback to the drug treatment of Oxybutynin. Not only did the behavioral interventions result in a higher rate of continence (80.7% improvement vs. 68.5% with drug treatment), but the participants were so pleased with the behavioral interventions that 96.5% of them (*n*=197) reported being comfortable enough with the procedures to continue them indefinitely.

Biofeedback and other behavioral based treatments for urinary incontinence in the elderly are often view as conservative strategies as compared to intrusive surgery, the prolonged use of supportive devices, or reliance on medication. Behavioral approaches are non-invasive, carry very little risk, and are typically inexpensive. The objectivity and social validity of such interventions also lends support to behavioral treatments.

Often times in care facilities it is not the physical condition of the resident which leads to incontinence but a failure of staff to fulfill their caretaking obligations and follow treatment programs (Carstensen. 1988). Behavior analysis has addressed staff performance in various other settings such as factories. schools. and treatment facilities for the developmentally disabled but little research has been conducted with nursing home staff. An illustrative example which attempted to address incontinence at the organizational level required staff to perform scheduled bed checks. prompt residents to toilet. actively assist residents in toileting. and deliver social approval for dryness and disapproval for wetness (Schnelle. et al., 1983). This intervention package resulted in a decrease in incontinent episodes by 45%, suggesting that before care providers deduce that elderly individuals possess an incontinence problem, the organizational structure should be assessed. Unfortunately, it may be more effortful to construct organizational change procedures such as those outlined above, than to carry out the repeated garment changing for residents with incontinency problems (Carstensen. 1988), but serious attempts should be made to examine staff contributions to the problem.

## SUGGESTIONS FOR TREATMENT

There is an unfortunate misconception adopted by some health care providers that once elderly individuals reach a certain age, incontinence is a naturally occurring event for which the elderly individual is past the point of rehabilitation, and it may be expected that further functioning loss will occur for them over time. Before health care providers concern themselves with the bigger task of learning new and more efficient procedures, the professional community must promote the position that many elderly individuals are people capable of learning about and improving their urinary incontinence.

Great accomplishments may be obtained through the adoption of effective treatments by those familiar with behavioral applications for incontinence and other health care professionals. However, it should be noted that behavioral techniques, like other techniques, are only effective if implemented systematically, consistently, and according to research. Therefore, proper research is an important next step. In addition, education and staff training for direct care staff such as nurses and certified nurses is needed. Just as importantly, health care providers must recognize that maintenance is a crucial element of using behavioral techniques. If staff or patients seem to be "forgetting" what they have learned, it should be acknowledged that forgetting is a natural process and that what is needed is a refresher rather than a termination of the use of once effective techniques. The goal is enhancement in the quality of life for the elderly individual that has the possibility of regaining urinary control.

## CONCLUSION

Professionals faced with the issue of urinary incontinence in the elderly need to ask if the most effective, efficient methods are being used to aid this population in dealing with such a bothersome problem. Urinary incontinence is a costly, upsetting ailment for millions of elderly individuals. With the many health issues already in existence for this population, minimization of those that are reversible should be attempted and successful efforts should be promoted. Surgery and medication, while often effective, are not the only options from which a client may choose. Behavioral applications such as prompted voiding, habit training, pelvic muscle exercises, and biofeedback are often overlooked as options for treatment when they may have a high probability for treatment success. Effective treatments for urinary incontinence are badly needed, and the demand will grow as the elderly population itself grows. It is therefore critical for care providers to become aware of the potential successes of behavioral interventions.

## REFERENCES

Adkins, V.K., & Mathews, R.M. (1997). Prompted voiding to reduce incontinence in community-dwelling older adults. *Journal of Applied Behavior Analysis, 30,* 153-156.

Agency for Health Care Policy and Research *Overview: Urinary Incontinence in Adults,Clinical Practice Guideline Update.*, Rockville, MD. March 1996. http://www.ahrq.gov/clinic/uiovervw.htm

Association for Applied Psychophysiology and Biofeedback. (2001). What is biofeedback? *www.aapb.org/public/articles/details.cfm?id=4.*

Blonski, J. (2001). Is tolterodine (Detrol) or oxybutynin (Ditropan) the best for treatment of urge urinary incontinence? *Journal of Family Practice, 50,* 1017.

Burgio, K.L., Locher, J.L., Goode, P.S., Hardin, J.M., McDowell, B.J., Dombrowski, M., Candib, D. (1998). Behavioral vs drug treatment for urge urinary incontinence in older women. *Journal of the American Medical Association, 280,* 1995-2000.

Burgio, K.L., Whitehead, W.E., & Engel, B.T. (1985). Urinary incontinence in the elderly. *Annals of Internal Medicine, 103,* 507-515.

Burgio, L.D., & Burgio, K.L. (1986). Behavioral gerontology: Application of behavioral methods to the problems of older adults. *Journal of Applied Behavior Analysis, 19,* 321-328.

Burgio, L.D., Engel, B.T., Hawkins, A., McCormick, K., Scheve, A., & Jones, L.T. (1990). A staff management system for maintaining improvements in incontinence with elderly nursing home residents. *Journal of Applied Behavior Analysis, 23,* 111-118.

Bushman, W. (2000). What's the buzz on sacral nerve stimulation? *Contemporary Urology, 12,* 42.

Carstensen, L.L. (1988). The emerging field of behavioral gerontology. *Behavior Therapy, 19,* 259-281.

Hu, T.W. (1990). Impact of urinary incontinence on health-care costs. *Journal of the American Geriatrics Society, 38,* 292-295.

Hu, T.W., Gabelko, K., Weis, K.A., Dionko, A.C., McCormick, K.A., & Fogarty, T.E. (1992). Urinary incontinence: Treatment patterns, costs, and clinical guidelines. *Journal of the American Medical Association, 10, 184-186.*

Miltenberger, R.G. (1997). *Behavior Modification.* Pacific Grove, CA: Brooks/Cole Publishing Company.

National Association for Continence. (2001). Definition; Types; Treatment options. *www.nafc.org/treatment.*

Nigel, A.J. (1984). Biofeedback and Behavioral Strategies in Pain Treatment. Jamaica, NY: Spectrum Publications, Inc.

Ouslander, J.G, & Abelson, S. (1990). Perceptions of urinary incontinence among elderly outpatients. *The Gerontological Society of America, 30, 369-372.*

Rehfeldt, R. A., Steele, A. & Dixon, M. R. (2000). Transitioning the elderly into nursing homes: Problems and solutions. *Aspects, Activities, and Aging, 24*(4), 27-40.

Resnick, N.M. (1998). Improving treatment of urinary incontinence. *Journal of the American Medical Association, 280,* 2034-2038.

Schnelle, J.F., Traughber, B., Morgan, D.B., Embry, J.E., Binion, A.F., & Coleman, A. (1983). Management of geriatric incontinence in nursing homes. *Journal of Applied Behavior Analysis, 16,* 235-241.

Schwartz, M.S., & Associates, 2nd edition. (1995). *Biofeedback: A Practitioner's Guide.* U.S.: Guilford Press.

Sgandurra, A., Cipolat, L. G, Petrini, F., Martinelli, G. (1998). Anesthesia and psychology in the elderly patient. *Archives of Gerontology & Geriatrics, 6, 487-490.*

Susset, J.G., Galea, G., & Read, L. (1990). Biofeedback therapy for female incontinence due to low urethral resistance. *Journal of Urology, 143,* 1205-1208.

Tovian, S. M. (1996). Health psychology and the field of urology. In R.J. Resnick & R.H. Rozensky (Eds.), *Health Psychology Through the Life Span: Practice and Research Opportunities* (pp. 289-312). Washington, D.C.: American Psychological Association.

Urinary Incontinence Guideline Panel. (1992). Urinary incontinence in adults: Clinical Practice Guidelines (ACHPR Publication No. 92-0038). Rockville, MD: Public Health Service.

U.S. Department of Health, Association on Aging. (2000). Profile of older Americans:2000. *http://www.aoa.dhhs.gov/aoa/STATS/profile/default.htm#older*

U.S. National Library of Medicine. (2001). Medical Encyclopedia; Cystometric study. *http://www.nlm.nih.gov/medlineplus/ency/article/003904.htm*

U.S. National Library of Medicine. (2002). Medical Encyclopedia; Stress incontinence. *http://www.nlm.nih.gov/medlineplus/ency/article/000891.htm*

---

*Authors Notes*: Portions of this paper were written by the second author in partial fulfillment of the Masters of Science Degree in Behavior Analysis and Therapy at Southern Illinois University.

# Interview With Donald Meichenbaum

Donald Meichenbaum
*University of Waterloo*

(Interviewed on behalf of NAJP by)
Michael F. Shaughnessy
*Eastern New Mexico University*

Marilyn Haight
*Texas Tech University*

Donald Meichenbaum, Ph.D., is a Distinguished Professor Emeritus at the University of Waterloo, Ontario, Canada, and Research Director of The Melissa Institute for Violence Prevention and Treatment of Victims of Violence, in Miami, Florida ***(see www.melissainstitute.org)***. One of the founders of *Cognitive Behavior Therapy*, a survey reported in the *American Psychologist* listed him as ***"one of the ten most influential psychotherapists of the century."*** He has received many honors, including the Honorary President of the Canadian Psychological Association. He is a prolific contributor and his writings cover a wide range of topics from trauma to anger to pain to educational issues. He lectures and consults internationally. You can contact him at dmeich@watarts.uwaterloo.ca or at 519-885-1211, extension 2551.

**NAJP:** From your bio sketch I see that you are now a Distinguished Professor Emeritus. What does that mean?

**DM:** The University of Waterloo in Ontario, Canada, where I worked for some thirty years, had a major financial cutback from the Provincial government. They brought in an early retirement package of which I took advantage. Moreover, when you have made some adjudged major contributions they give you the honor of being a Distinguished Professor Emeritus.

**NAJP:** That's impressive!

**DM:** The key piece is that with the title comes free parking. After some 30 years of paying for parking this is welcomed. What they fail to tell you is that while on the one hand they give you free parking, on the other

---

*Author info*: Correspondence should be sent to: Dr. Michael Shaughnessy, Eastern New Mexico University, Portales, NM 88130

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 213-222.
© NAJP

hand they take away your offices. So you get in free but you have no place to go.

**NAJP:** What did you decide to do?

**DM:** Well, if you live in Canada and you retire, one of the things you do is go to Florida for the winters, with about 25% of the Canadian population. But, what took me to Florida was not only the warmth, but I also became Research Director of The Melissa Institute for Violence Prevention and Treatment of Victims of Violence in Miami.

**NAJP:** I think our readers would be interested in your work with The Melissa Institute. Please tell us about the Institute and your current activities.

**DM:** Melissa was a young lady who grew up in Miami, Florida and was attending Washington University in St. Louis where a tragic event occurred. She was car jacked and brutally murdered. When such tragedies occur, one way that people try to "cope," if that is an appropriate term, is to transform their pain into something good that could come from such an event. Melissa's parents, friends and community responded by developing an Institute in her name that is designed to reduce the likelihood that there will be other Melissas. I am Research Director of this Institute.

**NAJP:** What exactly does The Melissa Institute do and how does this reflect on your current interests?

**DM:** The Melissa Institute is *not* a direct service Institute. It does not provide clinical services to patients, but rather its mission is to bridge the gap between research findings and public policy, treatment procedures and educational practices. It is designed to "give science away."

**NAJP:** How does The Melissa Institute fulfill its mission?

**DM:** In multiple ways. First, we provide ongoing training in the form of an annual conference, training and consultation to clinicians, teachers and principals, parents and politicians. We also provide graduate student financial scholarships to support dissertations.

**NAJP**: How can our readers, especially needy graduate students, learn more about The Melissa Institute?

**DM:** They can go online to ***www.melissainsittue.org*** and learn of the Institute's multiple activities.

**NAJP:** There are two parts to The Melissa Institutes mission, as you described it. One has to do with violence prevention and the other has to do with the treatment of victims of violence. Can we talk about each, in turn?

**DM:** Surely. Let me begin with a question that has preoccupied me for some time. *How do you make a violent individual?* If we could ascertain how angry and violent behavior develops, then perhaps we could implement *effective* preventative and treatment interventions. I emphasize effective interventions, because I will highlight that one of my concerns is that well-intentioned clinicians and health care providers have the potential of making things worse. One of the goals of The Melissa Institute is to ensure that clinicians become critical consumers and reflective, critically-minded, sensitive therapists.

**NAJP:** How do you make a violent individual and what are the implications for interventions?

**DM:** To begin with, I soon came to realize, as I immersed myself in the literature on the development of aggressive behavior and as I spent more and more time with violent offenders, that my initial formulation was too simplistic. For example, if I asked you, "How do you make a cancer patient?," you would say, "Just one moment, which kind of cancer patient are you taking about?" -- breast cancer, prostate, lung and so forth. Each type may have a different set of factors and a different developmental trajectory. Well, the same applies in the area of.violence. We now know that researchers have drawn a useful distinction between early-onset aggressive behavior that evidences some consistency over time *versus* late preadolescent onset of aggressive behavior. Moreover, aggressive behavioral patterns vary across gender and across racial-ethnic backgrounds. Thus, the answer to my initial question about "How to make a violent individual?" is both complex and interesting.

**NAJP:** What factors go into the early-onset development of aggressive behavior?

**DM:** I will give you the abridged answer. If you want the full answer, I would have you take a look at a recent clinical handbook I wrote on *Treating Individuals with Anger-control Problems and Aggressive Behaviors. (Order information is available from renmor@golden.net).*

In the book I note that the *early-onset aggressive* individuals have the following developmental trajectory:

> Child is born with a difficult temperament in part due to exposure of a stress-engendering intrauterine environment, often a concomitant of a low SES environment of the parents
>
> Child evidences preschool noncompliance, and experiences the beginning of coercive – acquiescence parent-child conflicts
>
> Child manifests attentional problems, impulsivity, oppositional and hyperactive problems
>
> These difficulties may be exacerbated by experiences of various forms of victimization and neglect that can have physiological, as well as psychosocial effects contributing to developmental delays and inadequate attachment relationships
>
> A major sequelae of this developmental history is academic difficulties, especially in the reading comprehension domain which is critical to school success and school attachment. ***(The Melissa Institute has placed major emphasis on improving reading as a violence prevention procedure.)***
>
> As children manifest various forms of overt conduct disorder (aggressive, bullying, disobedience) they may also have poor peer relationships and experience peer rejection, resulting in their associating with other similar "deviant" peers.
>
> On top of this developmental scenario, if the child has parents who employ harsh, inconsistent discipline and who provide minimal supervision and lack of affection, then the youth is likely to develop a number of delinquent behaviors. In fact, youths with conduct disorders have the highest likelihood of developing substance abuse problems. Substance abuse and violence go hand-in-hand.
>
> Finally, if these youths come in contact with the Juvenile Justice System, resulting in incarceration or treatment with other like-minded youth, then the risk of aggressive behavior escalates further. In fact, research that I review in the clinical handbook highlights that aggressive youth who are provided with group interventions have an increased likelihood of becoming more violent than do those youth who did *not* receive treatment.

**NAJP:** Is that what you meant by our potential of making things worse?

**DM:** Yes! I have offered a Case Conceptualization Model (CCM) that summarizes the risk and protective factors and integrates the various factors that contribute to aggressive behaviors. I want to highlight also that *not all* youth exposed to this developmental trajectory develop violent behavior. There are a number of individual, social and systemic factors that can be accessed and nurtured that can reduce the likelihood of aggressive behavior.

**NAJP:** Are you saying there is hope?

**DM:** Absolutely! I now have two grandchildren and I have dedicated the remainder of my life to see if I can make the world a bit safer for them.

**NAJP:** What are the implications of this developmental model for prevention and treatment?

**DM:** I would ask your readers the same questions. What prenatal and early intervention programs; what early identification and educational intervention programs; what anti-bullying and prosocial peer intervention programs; what parent training programs; what skills training and interpersonal supportive and resilience-engendering programs, and the like, could be implemented to alter this developmental trajectory? We now have a pretty good idea of what works, what's promising, and what doesn't work. The interested reader can go to The Melissa Institute website (www.melissainstitte.org) and download the website information that describes these programs.

**NAJP:** So in your retirement years, you are not merely walking the beaches of Florida sipping Mai Tais and Pina Coladas?

**DM:** Well, sometimes.

**NAJP:** It sounds like you have entered The Erik Ericksonian developmental phase of "generativity."

**DM:** I will tell you that as Research Director of The Melissa Institute I have had the most fascinating lessons on learning how administrators, politicians and clinicians make intervention-based decisions. My goal is to make sure that such decision-making is informed by research findings. Psychology has a good deal to offer.

**NAJP:** I know that your research on cognitive behavioral interventions like stress inoculation training and emotion-regulation therapeutic procedures have been employed successfully with individuals with aggressive problems and associated co-morbid disorders.

**DM:** The stress inoculation treatment model has three main phases that include:

> Collaborative conceptualization and Socratically-based educational procedures that are designed to heighten awareness, engage patients in assuming responsibility and motivating them to change

> Skills-based interventions that highlight both intra- and interpersonal training procedures and builds in generalization-enhancing strategies Application training that involves both in-clinic and graded exposure-based procedures outside of treatment. Relapse prevention procedures are built into this Phase, as well.

**NAJP:** Stress inoculation training sounds like a comprehensive intervention procedure. Can it be conducted on both a group, as well as on an individual basis?

**DM:** Yes, although the research suggests that individually-based interventions are more effective. Such cognitive-behavioral interventions have also been employed successfully with angry and aggressive children and adolescents. The earlier we intervene, the more likely we are to be effective. Also, consistent with the emphasis on "inoculation," it is worth noting that Stress Inoculation Training has been employed on a preventative basis with police officers, UN peace keepers, military officers, and psychiatric staff who are at very high risk of being victims of violence. For example, in the clinical handbook I have included a set of training guidelines on how to defuse an angry and violent individual. This is critical when you consider that nearly one-half of psychotherapists will be threatened and physically attacked at some time in their careers by their patients, and that between 4% and 8% of individuals brought to psychiatric emergency rooms bring weapons. Clinicians need to be informed about how to predict violence and how to handle angry and aggressive patients (let alone colleagues and managed care personnel).

**NAJP:** While one aspect of The Melissa Institute focuses on violence prevention, the other focuses on the treatment of victims of violence. I know you have been called upon to help with the aftermath of a variety of major tragedies, including the September 11 terrorist attacks, the bombing in Oklahoma City, the school shooting in Columbine. Let me turn your attention to your work on the impact of trauma.

**DM:** This is a timely topic given that this interview is being conducted as the U.S. is on the brink of war with Iraq and we are confronted with the possibility of future terrorist attacks. In fact, I am on the APA committee designed to bolster resilience in the face of possible terrorist attacks.

**NAJP:** I know you have also written a *Clinical Handbook on Treating Adults with Post Traumatic Stress Disorder.*

**DM:** Yes, and like the *Clinical Handbook on Anger-Control*, I published it myself and use the funds to help support my most recent activities. *(Order information on the PTSD Handbook is also available from renmor@golden.net).*

**NAJP:** How did you become involved in working with trauma patients?

**DM:** You can't work as a psychotherapist and not be involved with the issue and impact of trauma. Epidemiological research indicates that some 50% of psychiatric patients have a history of victimization and this is often overlooked, under-diagnosed, and as a result goes untreated. In fact, it is estimated that of the 100 million women in the U.S., some 68 million of them will have a history of victimization that can take the form of child sexual abuse (1 in 4); rape (12 million cases) and be victims of domestic violence (once every 12 seconds in the U.S.). Some 38% of these women will have repeated victimization. In the *Clinical Handbook on PTSD* I review the comparable data for men and the accompanying sequelae.

It has been estimated that some 50% - 60% of adults in North America will experience a Criterion A event *(This refers to DSM-IV criterion for the diagnosis of Post Traumatic Stress Disorder that indicates that the individual has experienced or witnessed a traumatic event that is life-threatening.)* Now, the fascinating piece to this puzzle is that while the incidence of exposure to traumatic events is high, the actual incidence of PTSD is relatively low (approximately 10% in women, 5% in men). In fact, what intrigues me is that the story of exposure to traumatic stress is a remarkable story of "resilience and courage". Whether you look to the survivors of the Holocaust, the Hiroshima atomic bombing, or the reactions to the London Blitz, the central finding is the ability of people to survive and become stronger as a result of such exposure.

**NAJP:** What is your therapeutic approach toward individuals who have been victimized?

**DM:** It is one laced with respect and caution. The respect derives out of my desire to *hear* their "stories" and to help them *change* the nature of their stories, if they are not functioning as well as they would like. The caution comes out of an increasing recognition that a number of interventions (debriefing procedures, and various so-called "power therapies") have been found to make people worse. I would encourage your readership to look at the recent book on *Science and pseudoscience in clinical psychology* by S. Lilienfeld, S. Lynn and J. Lohr (Guilford

Press. 2003). Consistent with my mission of "giving psychology away," we should begin with our own profession. We have the potential as clinicians to make patients worse and to increase PTSD. That is why I wrote my *Clinical Handbook* and why I conduct training workshops to make sure clinicians are informed and are critical consumers.

**NAJP:** I know you have become a major advocate of a constructive narrative perspective when it comes to treating individuals with trauma histories. Can you please share what led you to this treatment approach?

**DM:** As I worked with patients who had experienced various forms of trauma, I became fascinated with how they described the impact of their experiences. Ordinary language seemed inadequate to describe what they had encountered and their accompanying reactions. In their own way, these "victimized" individuals became "poets," using metaphors to describe their experiences. They tended to use "like a" statements. They came to describe themselves as "prisoners of the past," as "soiled goods," or as being a "time bomb ready to explode." Just imagine the impact of telling yourself and others that you are a "prisoner of the past." If you go about describing your experiences in such metaphoric terms they become a prism through which you construct your worldview. These metaphors soon lose their "like a" quality and become part of the patients' narrative accounts. Moreover, patients get stuck using the coping techniques that have worked in the past to deal with current stressors. They may continue to use dissociation, avoidance, hypervigilance and intrusive ideation, each of which at one point may have been an adaptive way to "dose oneself," search for meaning, garner social supports, and the like.

One objective of treatment is to validate, normalize such reactions and then to have patients consider the impact, toll, costs they pay for engaging in such behaviors. Their behaviors are viewed as a means to achieve some goal and the task for therapy is to help them find more adaptive ways to achieve these goals. I help patients consider, in a collaborative fashion, answers to the following questions:

> How are things now?
> How would you like them to be?
> How can *we* work together to help you achieve your goals?
> What have you tried in the past to achieve your goals?
> How did it work? What lessons could you learn from your previous attempts?
> What, if anything, could you do to change your situation?
> If we were successful in working together, what would change?
> Who else would notice these changes? What would they see you do differently?

What have you done differently since we met last time?

Notice that all of the questions are of a "how" and "what" variety, and rarely do I ask "why" questions. Indeed, the "art of questions" is the therapist's most valuable tool.

**NAJP:** Is your treatment focused only on the "here and now" goal-setting variety or do you also do what is often called "memory work" with victimized patients who experience PTSD and Complex PTSD?

**DM:** From my perspective, it is not that bad things happen to people *per se*. Bad things happen to lots of people – remember the epidemiological data I cited before. Rather, it is the "story" that individuals tell themselves and others about these "bad" events that is critical. What lingers from these experiences? What conclusions do victimized individuals draw about themselves, the world, and their future?

**NAJP:** Are you saying that one of the goals of therapy is to help people change their "stories?"

**DM:** Exactly. I want to help patients co-construct a different, more adaptive, narrative in therapy. But more is involved. They need to also develop intra- and interpersonal coping skills. Cognitive-behavioral therapy techniques can be quite useful in helping patients develop these coping skills. I help patients engage in "personal experiments" that provide them with data that they can eventually take as evidence to unfreeze the beliefs they hold about themselves and the world. The results of such ongoing personal experiments that occur both within and outside of the therapeutic setting provide the basis for the patients to develop a new narrative and more adaptive coping behavior.

This co-constructive process is one that emerges out of experientially meaningful efforts by the patient. I work on helping patients assess, develop and nurture the individual, social and systemic strengths they bring to therapy. I also ensure that patients take credit for the changes they bring about.

**NAJP:** What role does the therapeutic relationship play in this change process?

**DM:** The therapeutic relationship is critical to the change process. It is the glue that makes the various therapeutic processes work. The therapeutic relationship where patients can tell their stories at their own pace to an accepting, nonjudgmental, supportive, emphatic therapist provides a basis for change. But, the therapist needs to be sure to hear (and ask about) the rest of the patients' stories or what they did to survive.

**NAJP:** In terms of metaphors, I recall you describing in your *Clinical Handbooks* that you conduct therapy in a Socratic fashion (as you described it in the fashion of detective Colombo, the television character played by Peter Falk).

**DM:** Yes. I am at my therapeutic best when the patients I see are one step ahead of me, offering the advice I would otherwise offer. If patients come up with ideas of how to change (by means of discovery-based procedures), they are more likely to follow through then if I give them the ideas. Moreover, they feel more empowered and efficacious if they generate the solutions for change and then follow through. In my recent *Handbook on Anger-control*, I specify the core tasks of psychotherapy and what "expert" therapists do to implement them. My next major activity will be to develop training materials and data to support these core tasks of psychotherapy.

**NAJP:** I was going to ask you what you are doing with your time in retirement. I guess the answer is apparent, you are busier than ever.

**DM:** You are starting to sound like my wife. Maybe we should stop while I am ahead. Thank you for the invitation to be interviewed!

# A Comparison of Communication Apprehension Scores Between Americans and Argentineans

Victoria Sarquisse, Jeff Butler, & Burt Pryor
*University of Central Florida*

This study compared communication apprehension levels between Americans and Argentineans. A Spanish translation of the *Personal Report of Communication Apprehension* was administered to 200 Argentine students and an English version to 132 American college students. The mean communication apprehension levels for both samples were similar to previously reported United States norms. and did not differ significantly from each other. The findings are discussed in the context of culture characteristics.

The concept of communication apprehension (CA) has been fundamental in the investigation of communication avoidance since 1970 (McCroskey, 1984). Communication apprehension is "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey, 1978). Related constructs include social-communicative anxiety, reticence, shyness, audience anxiety, unwillingness to communicate, and predisposition toward verbal behavior (see Daly & Stafford, 1984).

Cross-cultural research in this area is limited. There has not been a major cross-cultural investigation since Klopf (1984), who launched an investigation in the Pacific Basin. Klopf conducted numerous studies on communication apprehension between Western and Eastern cultures, such as China, Japan, and the Pacific Basin. However, few studies have assessed differences between North and Latin America (formed by South and Central America). The current study represents a first attempt to assess levels of communication apprehension in Argentina. Certain social factors must be understood in order to better understand the comparative data of this study.

Argentina distinguishes itself from many other countries in Latin America by the size of its middle class. According to the Central Intelligence Agency (CIA), the country has a literacy rate of 96.2 percent (equal to the US), and claims the highest per capita income (US$ 8.570) in South America (2002). It is now a candidate for membership in the Organization for Economic Cooperation and Development (OECD). The country's population is rooted in the arrival of European immigrants who

---

*Author's info*: Correspondence concerning this article should be sent to Victoria Sarquisse, http://vsarquis@mail.ucf.edu. Nicholson School of Communication. University of Central Florida. Orlando, FL 32816-1344.

*North American Journal of Psychology*, 2003, Vol. 5. No. 2. 223-228.

© NAJP

flooded Argentina at the turn of the twentieth century, similar to the immigration experienced by the United States. Marcus Anguinis, an Argentine researcher, explains that emigration flow at the end of the 19th and beginning of the 20th century was to New York and Buenos Aires. In New York, new immigrants had to stay for 40 days and pass several tests before they could be accepted as part of the society. Immigration was easily accomplished in Buenos Aires since a special hotel was provided to immigrants until they acquired the papers to remain in the country. This "Immigrant Hotel" protected immigrants until they found jobs, family, friends, or people from the same European country. Consequently, many immigrants easily assimilated the culture and became part of the population. It was said that Mexicans descended from the Aztecs, the Peruvians from the Incas, and the Argentines …from the ships" (Campbell, 2000). "Many leading Argentine industrialists and entrepreneurs proudly hearken back to their immigrant forefathers' humble beginnings in the search of the 'American Dream' just like the immigrants that arrived in the United States" (Campbell, 2000). By 1914, there were 1.5 immigrants for every 10 people in the United States, while three of every 10 Argentine residents were immigrants. Campbell also claimed that there is no "true Argentinean identity." In fact, 40 percent of Argentines identify themselves as Italians, Spanish, Germans, and Poles. Census numbers published by the CIA show the ethnic makeup of Argentina is 97% white, 3% Mestizo, Amerindian or other non-white group. Like Argentina, the US has a predominantly white population (83.5%), with 12.3% black, 3.3% Asian, and 0.8% Amerindian (Hispanics are not included because the US Census Bureau considers Hispanic to mean a person of Latin American descent, especially Cuban, Puerto Rican or Mexican origin living in the US. Hispanics may be of any racial or ethnic group, CIA, 2002).

Buenos Aires, the capital of Argentina, is known as the Paris of the South. Buenos Aires was formed by people who "talk like Italians, dress like Frenchmen, and think like British" (Campbell, 2000). The languages spoken in Argentina are Spanish (official), English, Italian, German, and French. In the southern part of Argentina languages such as German and Welsh are commonly spoken. In the cities, particularly in Buenos Aires, people speak English, as well as French and Italian. As one moves closer to the provinces, European languages are less commonly heard (Campbell, 2000). Argentina and the United States share many commonalities.

Gudykunst and Kim (1997) identified South American countries such as Brazil, Colombia, Mexico, Panama, Peru, and Venezuela as collectivist. They argue that the family is the primary in-group in collectivistic cultures, such as those in Latin America. Despite the assumption that all Latin American countries belong to a collectivistic culture there has been no research on whether Argentina belongs to a collectivistic or an individualistic culture. Because of the cultural similarities between Argentina and the United States, one might posit the existence of similar levels of societal communication apprehension. Consequently, the current investigation tested the following research question: Do Argentines and Americans differ significantly in levels of communication apprehension?

## METHOD

### Participants

The Argentine sample was drawn from two well-known universities in the metropolitan city of Buenos Aires. This city, and capital of the nation, was chosen for sampling because (1) it is the largest city in Argentina, both in terms of population and geographical size; and (2) it is somewhat representative of the entire population, since people from the 24 states are drawn to Buenos Aires for its job opportunities and educational potential. Specifically, the Argentine sample consisted of 200 college students from the University of Buenos Aires and from El Salvador University. The Argentine participants represented a diverse span of disciplines, including English, Liberal Studies, Medicine, Dentistry, Political Science, Law, Math, Physics and Engineering. The American sample consisted of 132 college students enrolled in speech fundamentals courses at the University of Central Florida. Since this course is required of students in all majors at the University, the diversity of majors represented was similar to that of the Argentine participants. The Argentine and American participants were predominantly of traditional college age, with approximately equal numbers of males and females.

### Materials and Procedure

McCroskey's (1982) *Personal Report of Communication Apprehension* (PRCA-24) was used to measure communication apprehension. The PRCA-24 is a self-report instrument that measures communication apprehension across four contexts, including public speaking, meetings or classes, small groups, and dyads. McCroskey (1984) reports reliability levels consistently above .90 and "overwhelming" predictive validity for the instrument.

The PRCA-24 was converted by the primary author of this study into Spanish. To verify the validity and reliability of the translation, two steps were involved before administrating the Spanish version to respondents. First, the Spanish translation was translated back to English by 35 bilingual students majoring in English. The students, who worked independently, consistently produced versions of the PRCA-24 that were almost identical to McCroskey's (1982) English version of the instrument. Second, the final Spanish translation of the PRCA-24 was approved by the Director of the College of Modern Languages, and also by the Director of the College of Education and Social Communication, both from El Salvador University, for its correspondence to the English version.

The participants completed their respective versions of the PRCA-24 during regular class sessions at the request of their course instructors. Each instructor followed standardized instructions, including debriefing, in collecting the data.

## RESULTS AND DISCUSSION

The PRCA scores for the Argentine sample were compared to the scores for the American sample with a one-way ANOVA. The Argentine PRCA mean (74.47; $SD = 17.44$) did not differ significantly from the American mean (72.96; $SD = 14.93$; $F_{(1,\ 330)} = .71$, $p < = .40$). Additionally, both means are within approximately half of a standard deviation of McCroskey's (1982) normative data ($M = 65.6$; $SD = 15.3$), based on 25,000 American college students. The current findings suggest that Argentines and Americans possess similar levels of communication apprehension.

The results of the current investigation raise questions as to whether Argentina differs from other countries in South America in terms of collectivism. South American culture is typically described as "collectivist" or "high context" (Gudykunst & Kim, 1997; Hu & Grove, 1991). Since high context cultures are characterized by comparatively high levels of communication apprehension (Gudykunst & Ting-Toomey, 1988: Zhang, 1993), one would expect Argentines to score high on this dimension, unless the Argentine culture differs from the South American norm. Since the current investigation indicates that Argentines experience levels of CA comparable to those experienced by North Americans, future investigators might seek to assess whether Argentina's culture differs from the typical South American collectivist profile. The current investigation offers anecdotal support for such a proposition.

While the present findings do not offer conclusive evidence that Argentina should be considered a low context culture, they do raise questions about the accuracy of generalizations based on entire geographic regions – in this case Latin America. Cultural variance within Latin American countries may be substantial, especially where patterns of immigration and other factors combine to produce different population bases.

## REFERENCES

Campbell. Andrea M. (2001). *Passport Argentina: Your Guide to Argentine Business. Customs. and Etiquette.* World Trade Press. Novato. CA.

Central Intelligence Agency. (2002. April 1). United States. *In The World Factbook–Argentina.* Retrieved from *http://www.odci.gov/cia/publications/factbook/goes/us.html*

Daly. J.A.. & Stafford. L. (1984). Correlates and consequences of social-communicative anxiety. In J.A. Daly & J.C. McCroskey (Eds.). *Avoiding Communication.* Beverly Hills. CA: Sage Publications. Inc.

Gudykunst. W.B.. & Yun Kim (1997). *Communicating with Strangers: An Approach to Intercultural Communication.* New York: McGraw-Hill.

Gudykunst. W. B.. & Ting-Toomey. S. (1988). *Culture and Interpersonal Communication.* Newbury Park. CA: Sage.

Hall. E.T. (1959). *The Silent Language.* New York: Doubleday.

Hu, W.. & Grove. C. L. (1991). *Encountering the Chinese:A Guide for Americans.* Yarmouth. Maine: Intercultural Press. Inc.

Klopf. D.W. (1984). Cross-cultural apprehension research: A summary of Pacific Basin studies. In J.A. Daly & J.C. McCroskey (Eds.). *Avoiding Communication.* Beverly Hills CA: Sage Publications. Inc.

McCroskey. J.C. (1970). Measures of communication-bound anxiety. *Speech Monographs. 37.* 269-277.

McCroskey, J.C. (1978). Validity of the PRCA as an index of communication apprehension. *Communication Monographs, 45.* 192-203.

McCroskey, J.C. (1982). Oral communication apprehensive: A reconceptualization. In M. Burgoon (Eds.), *Communication yearbook 6.* Beverly Hills. CA: Sage.

McCroskey. J.C. (1984). The communication apprehension perspective. In J.A. Daly & J.C. McCroskey (Eds.). *Avoiding Communication.* Beverly Hills. CA: Sage.

Zhang, Y. (1993). *Comparison and measurement of communication apprehension between American and Chinese college students.* Unpublished masters thesis. University of Central Florida.

# Motivational Interviewing and Fluoxetine for Pathological Gambling Disorder: A Single Case Study

Jeffrey G. Kuentzel, Melinda J. Henderson,
Joseph J. Zambo, Susan M. Stine,
& Charles R. Schuster
*Wayne State University*

Motivational Interviewing (MI) is a brief psychotherapeutic intervention that is an effective treatment for substance addictions, but its utility for Pathological Gambling Disorder (PGD) has yet to be established. Selective serotonin reuptake inhibitors (SSRIs) hold promise for PGD because of the association between serotonergic activity and the frequency/intensity of impulsive behaviors. In this study, an adult male completed a 10-week trial of fluoxetine (an SSRI), 20mg daily, and four sessions of MI. At baseline, the patient met all ten of the DSM-IV criteria for PGD, and reported spending $200-$300 per week on gambling. At the end of treatment, he reported spending under $30 per week. At 3-month follow-up the patient reported spending $50 per week, and he no longer met criteria for current PGD. Negative mood decreased significantly during the study, and remained low at follow-up. The patient expressed satisfaction with his treatment outcome. Implications for the use of MI and/or fluoxetine with pathological gamblers are discussed within the context of the present study's design limitations.

Pathological Gambling Disorder (PGD; American Psychiatric Association, 1994) is as prevalent in the United States and Canada as many other psychiatric diagnoses, but it is not nearly as well understood (Petry & Armentano, 1999). Evidence suggests that around 4% of North American adults have gambling problems, and one quarter of these individuals have severe problems (Shaffer, Hall, & Vander Bilt, 1999). Notwithstanding the tremendous personal toll that pathological gambling can take, individuals with gambling problems often have prominent comorbid psychiatric diagnoses (Crockford & el-Guebaly, 1998), underscoring the importance for researchers and clinicians to learn more about the etiology and effective treatment of PGD.

Several review articles have addressed the state of our knowledge about how to best treat PGD (e.g., Petry et al., 1999), but this literature is clearly in its infancy. Although a few controlled treatment studies have

---

*Author info:* Correspondence should be sent to: Dr. Jeffrey G. Kuentzel, Wayne State University Psychology Clinic, Knapp Building, 87 E. Ferry, Detroit, MI 48202 E-mail: jkuentzel@yahoo.com

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 229-248.

© NAJP

been published (e.g., Hodgins, Currie, & el-Guebaly, 2001; Sylvain, Ladouceur, & Boisvert, 1997), there is no standard treatment for PGD (Petry et al., 1999). However, some approaches have shown considerable promise, including some forms of psychotherapy and pharmacotherapy.

### Motivational Interviewing

A psychotherapeutic approach with considerable demonstrated effectiveness in the substance addictions field is Motivational Interviewing (MI; see Miller & Rollnick, 2002, for a review of this extensive literature). MI is a directive and client-centered approach that helps patients identify and resolve ambivalence about change. MI represents a significant departure from traditional treatments for substance addictions (e.g., the 12-step facilitation model), in that it is wholly non-confrontational. Over the last two decades, in a comprehensive program of research on MI, Miller and his colleagues found that therapist attempts to *persuade* patients that they should change often fail, whereas *eliciting* reasons to change from patients tends to result in positive outcomes (Miller, 1996). In this light, resistance is not viewed as a characteristic of the patient; rather, it results from the therapist's approach to the patient (Miller et al., 1991). Thus, a confrontational style could *create* resistance in a patient who otherwise might not resist. Indeed, one study found that the more a therapist confronted the patient, the more the patient drank (Miller, Benefield, & Tonigan, 1993).

The "spirit" of MI is represented in the following five guiding principles (Rollnick & Miller, 1995). The therapist *expresses empathy* with the patient, rather than presenting a confrontational or disapproving demeanor. The therapist *avoids argumentation*, thereby diminishing the patient's defensiveness. The therapist *rolls with resistance*, viewing it as a natural part of the patient's ambivalence about change. The therapist *develops discrepancy*, allowing the patient to see that his/her behaviors may not be consistent with stated long-term goals. Finally, the therapist *supports self-efficacy*, increasing confidence in the patient's ability to effect change.

There are ample data supporting the effectiveness of MI for treatment of alcohol addiction (Miller, 1996; Miller & Rollnick, 2002). Project MATCH, a large-scale, multi-site clinical trial, found four sessions of MI to be generally as effective as 12 sessions of two other forms of treatment (cognitive-behavioral therapy and 12-step facilitation) upon completion of treatment and at 1-year and 3-year follow-ups (Project MATCH Research Group, 1997, 1998). The outcome literature points to the remarkable efficiency with which MI operates as a brief intervention. One controlled study found a modest but significant reduction in alcohol use at 6-month follow-up after a single 15-minute motivational intervention in a primary care setting (Senft, Polen, Freeborn, & Hollis, 1997). Another reported a significant reduction in drinking (as compared to a no-treatment control group) six months after a single 60-minute intervention (Borsari & Carey, 2000).

Although the principles and techniques of MI were developed to treat alcohol and drug addictions, they are generic and as such can be applied to a variety of problems. Promising preliminary case study data have been reported that demonstrated the feasibility of using MI interventions with problem gamblers (Childers, Kuentzel, & Henderson, 2001), but to date only one published study addresses the use of MI techniques for pathological gambling (Hodgins et al., 2001).

Hodgins et al. (2001) adapted MI techniques for use in a single 20-45 minute telephone intervention with problem gamblers. A self-help intervention was also tested, which consisted of a workbook that problem gamblers received by mail. Participants were randomly assigned to one of three groups: a waitlist condition, the self-help workbook condition, or the workbook condition plus the phone MI intervention. At one month post-intervention, the workbook plus MI group was significantly improved relative to the workbook-only group and waitlist controls. At 3- and 6-month follow-ups, the MI treatment group continued to show better improvement in gambling behaviors than the workbook-only group, although at 12-month follow-up, the advantage of the MI group was no longer significant.

The MI-based telephone intervention used by Hodgins et al., (2001) shows promise, but to date there have been no investigations of MI with pathological gamblers using the same psychotherapy format (four individual face-to-face sessions) that has been shown to be effective with alcohol abusers (Project MATCH Research Group, 1997, 1998), in either case study work or controlled trials.

### Pharmacological Interventions

There have been no large clinical trials of psychopharmacological treatments for pathological gambling, but several small studies have shown promise for serotonin reuptake inhibitors (Hollander, DeCaria, Finkell, Begaz, Wong, & Cartwright, 2000; Hollander et al., 1998; Hollander, Frenkel, DeCaria, Trungold, & Stein, 1992). Serotonergic involvement has been implicated in impulsive/compulsive behavior (DeCaria, Hollander, Grossman, Wong, Mosovich, & Cherkasky, 1996; Ibanez, Blanco, & Saiz-Ruiz, 2002; Stein, Hollander, & Liebowitz, 1993), which is a central feature of pathological gambling. There are reported indications of serotonin hypoactivity in pathological gamblers (Moreno, Saiz-Ruiz, & Lopez-Ibor, 1991), pointing to the potential utility of pharmacological agents that increase serotonergic activity (e.g., clomipramine, fluvoxamine, fluoxetine) for this population.

Further, pathological gamblers may present with co-morbid depression (Black & Moyer, 1998). Treatment of such individuals with serotonin reuptake inhibitors may be desirable because of their known effectiveness for depression.

### Rationale for the Present Study

The present study employed a single participant design in exploring the feasibility and effectiveness of MI, adapted from the manualized treatment used in Project MATCH (Miller, Zweben, DiClemente, & Rychtarik, 1992), combined with fluoxetine, a selective serotonin reuptake inhibitor (SSRI). There has been a recent resurgence in interest in single case research designs (Blampied, 2000), especially with respect to clinical case studies (Elliott, 2002; Morgan & Morgan, 2001). Important features of the single participant design include repeated, objective measurement of dependent variables, and graphic representation and visual inspection of data (Morgan et al., 2001). The inclusion of multiple data points is optimal when investigating novel treatments, but is often only feasible with single case designs. We present data collected at eight time-points before, during, and after the treatment of a pathological gambler, and utilize extensive graphic representation of the data.

Importantly, this study represents the first published account of an attempt to treat pathological gambling using MI in a conventional treatment setting (i.e., in face-to-face meetings, as opposed to a one-session telephone intervention). Additionally, the individual whose treatment is described in this study presented to us with co-morbid depression, so the changes that were documented in his mood are also of interest.

## METHOD

### Design

The case presented in this paper was a participant in what was intended to be a larger, randomized double-blind study of fluoxetine and MI for problem gambling. The design called for all participants to receive four sessions of MI. Participants randomly assigned to the fluoxetine group received 20mg of the drug daily, whereas control participants received a placebo. Participants were recruited via advertising in a local newspaper, and through the use of the introductory psychology subject pool at Wayne State University in Detroit, Michigan. This study was fully approved by the Wayne State University Institutional Review Board.

Unfortunately, the controlled study was discontinued due to insufficient interest in participation by problem gamblers. Of 25 individuals who had contacted the researchers about participating, 19 were interviewed by phone to assess inclusion and exclusion criteria (the other six did not return messages and/or could not be reached). Ten declined to participate and one did not qualify for the study. Of eight who met inclusion criteria and expressed interest in participating, four showed for the first appointment, provided written informed consent to participate, and completed baseline measures. Two participants dropped out during the study, leaving two to complete the study. Due to space limitations, one of the complete cases was selected for presentation in this paper, but the outcomes for both of the cases were very similar (a write-up of the second case is available from the first author). When the randomization blind was broken, it was revealed that both of these cases had been assigned to the fluoxetine group.

### Data Collection

After a physical exam and medical history, participants were given a comprehensive battery of measures to determine eligibility. This baseline assessment was conducted by a M.A.-level therapist, as were the assessments that occurred throughout the treatment phase.

For the original, controlled trial of fluoxetine and MI, several commonly used instruments with established reliability and validity were selected to measure mood, aspects of personality, and to determine the presence of comorbid diagnoses. The Axis I and Axis II modules of the *Structured Clinical Interview* for the DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1995) were administered by the interviewer. Participants completed the *Beck Depression Inventory* - II (BDI-II; Beck, Steer, & Brown, 1996), and the *Profile of Mood States* (POMS; McNair, Lorr, & Droppleman, 1981).

To best capture the construct of gambling behavior and associated cognitions, we used multiple measures that employ very different formats. Participants were interviewed to determine the presence of DSM-IV (American Psychiatric Association, 1994) symptoms of PGD. The *South Oaks Gambling Screen* (SOGS; Lesieur & Blume, 1987) was completed by participants for current gambling (past two weeks), as well as lifetime history of gambling. The reliability and validity of the SOGS are well established (Stinchfield, 2002). Additionally, two single-item 11-point rating scales (Bujold, Ladouceur, Sylvain, & Boisvert, 1994) were given that ask respondents to report how much desire to gamble they are currently experiencing, and how much control over gambling they believe they currently possess (self-efficacy). We modified the items of the *Obsessive-Compulsive Drinking Scale* (OCDS; Anton, Moak, &

Latham, 1995) to pertain to gambling in order to provide information about obsessive cognitions and compulsive behaviors related to gambling[1]. The *Gambling Severity Index* (GSI; Lesieur & Blume, 1992), developed as an adjunct to the *Addiction Severity Index* (McLellan, Luborsky, O'Brien, & Woody, 1980), was also administered to participants. The GSI provides information on psychological symptoms associated with gambling, frequency of specific types of gambling, and legal consequences such as forgery or fraud. Respondents also rate the severity of their gambling problems and the importance to them of treatment for gambling problems on a 5-point Likert scale. Lesieur and Blume (1992) reported acceptable reliability and validity data for the GSI.

The *Timeline Followback* (TLFB) schedule, adapted from Sobell and Sobell (1996), was administered to provide detailed information on the amount of money spent on gambling, the amount of time spent, and the number of gambling occasions that had occurred over the preceding month. The TLFB method employs a calendar for the preceding month that is used as a tool for cueing the respondent's memory in retrospectively reporting on daily behaviors. The interviewer assists the respondent by labeling dates that were important to the respondent (e.g., pay days, holidays, etc.) so that a framework for better recall of gambling behaviors is created. Sobell et al. (1996) reported sound psychometric properties for the TLFB method with alcohol users.

At two-week intervals, many of the baseline measures were re-administered. Participants completed the BDI-II, POMS, and desire to gamble and control over gambling rating scales every two weeks. The TLFB also was administered every two weeks. These measures are not known to be susceptible to practice or retesting effects, and such effects would not be expected given that the measures were designed to be administered on a repeated basis to capture change over time.

At the twelfth week, participants completed the battery of measures that was given during the treatment phase, as well as the SOGS, the OCDS (adapted for gambling), and the GSI.

Participants returned three months after completion of the treatment phase to complete the treatment phase battery, plus the SOGS, the adapted OCDS, and GSI. Participants were also interviewed for the presence of current DSM-IV symptoms of PGD. The follow-up assessment was completed by a post-doctoral fellow in clinical psychology.

## Procedure

The participants were seen by the treating psychiatrist every two weeks. At each visit vital signs were taken and side effects were assessed. Participants received a placebo for the first two weeks in a single-blind condition to determine adherence and motivation to continue in treatment. They then received 20mg of fluoxetine (the recommended initial dose) each morning for the next ten weeks. Pills were supplied every two weeks, and the participants were asked to return pill containers in an effort to encourage adherence.

It is of importance to note that, as is the case with other antidepressant medications, the full antidepressant effect for fluoxetine may not be achieved until four or more weeks of treatment have been completed (PDR, 2003).

Four 1-hour individual sessions of MI (in keeping with the model used in Project MATCH; see Miller et al., 1992) were conducted with the participants by a M.A.-level therapist. The therapist was closely supervised by the second author, a licensed clinical psychologist with extensive training in MI and experience in treating addictions. The MI approach taken was structured after the techniques described in Miller et al. (1991) and the Project MATCH manual (Miller et al., 1992). Specifically, the therapist asked open-ended questions, developed discrepancies between goals and present gambling behavior, "rolled" with resistance, and negotiated plans to quit or reduce gambling. It was emphasized to the participants that the responsibility to reduce gambling behavior belonged exclusively with them, and that it was entirely their choice whether or not to change. When L said to the therapist during an MI session, "You really changed my life!", the reply was, "No, it all came from you." The therapist's style was genuine and empathic, and active listening (reflection) was employed extensively. Although the therapist's style was warm, an effort was made to allow for "healthy anxiety" in the participants as necessary to avoid the appearance of approval of continued gambling.

## The Case Study

L was a 49 year old, single African American male who lived in Detroit, Michigan. He had completed 15 years of formal education, and he worked as a clerk at a casino, making between $30,000 and $40,000 annually. He reported having gambled for the past 20 years of his life, primarily focusing on slot machines and lottery tickets, but he also had played cards and bet on sports and horse races. L's longest period of voluntary abstinence from gambling had been three months, and he had never previously entered treatment for gambling problems. He was in the midst of court proceedings about rent he owed.

At baseline, L reported spending $200-$300 per week on gambling[2]. When asked to rate on a five-point Likert scale how troubled he had been by gambling problems in the last month, he made the highest possible selection ("extremely"). He gave the same response when asked how important treatment for gambling problems was to him. He met all ten of the DSM-IV criteria for PGD. L reported that during the prior two weeks he had experienced serious anxiety, depression, difficulty concentrating, and thoughts of suicide (although intent was denied).

The SCID revealed a current Major Depressive Disorder. The depressive episode was the first L had experienced and onset had been during the prior year. He denied any alcohol or drug use, and did not meet criteria for any other Axis I disorder. No evidence for an Axis II disorder was found.

## RESULTS

### Baseline Data

On the SOGS, L obtained a score of 18 at baseline. A score of 5 is widely considered the threshold for probable PGD. The TLFB procedure indicated that in the previous month L had spent approximately $1200 on gambling. He had averaged 8.5 gambling occasions per week and over 7 hours per week spent in gambling activities.

On the OCDS (adapted for gambling) his score was 30 out of a possible 52 (there are no published norms for the adapted scale). On the 11-point rating scale for perceived control over gambling behavior, L selected 6, suggesting that he was experiencing a moderate degree of control and motivation at that point in time. On the rating scale for desire to gamble, where 10 indicates extreme desire and 0 represents no desire, he again selected 6.

The POMS yields six scores reflecting current (past week including today) levels of self-reported mood states. Nyenhuis et al. (1999) published new normative data (age-, gender-, and race-stratified according to 1990 census data) for the POMS, so the scores reported in the present study are *T*-scores (mean = 50, *SD* = 10) derived from those values. L's baseline scores were as follows: Depression, 92; Tension/Anxiety, 74; Fatigue, 69; Confusion, 83; Anger/Hostility, 76; and Vigor (a positive mood state), 40. These scores indicate that L was experiencing a great deal of negative affect relative to the average adult male nonpatient.

L's baseline BDI-II score of 28 was indicative of moderate to severe depressive symptomatology, and was consistent with his SCID findings.

### Treatment Phase

L completed the two-week placebo lead-in, and Week 2 data were collected the day after he began on fluoxetine. He had not yet had his first MI session when these data were collected. During this time period he continued to gamble heavily, averaging nearly 6 gambling occasions and over 10 hours per week spent in gambling activity, and spending $317 per week (see Figures 1 and 2). At the Week 2 visit he rated both his control over gambling and his desire to gamble as 5 (see Figure 3), the midpoint on the 11-point scale.

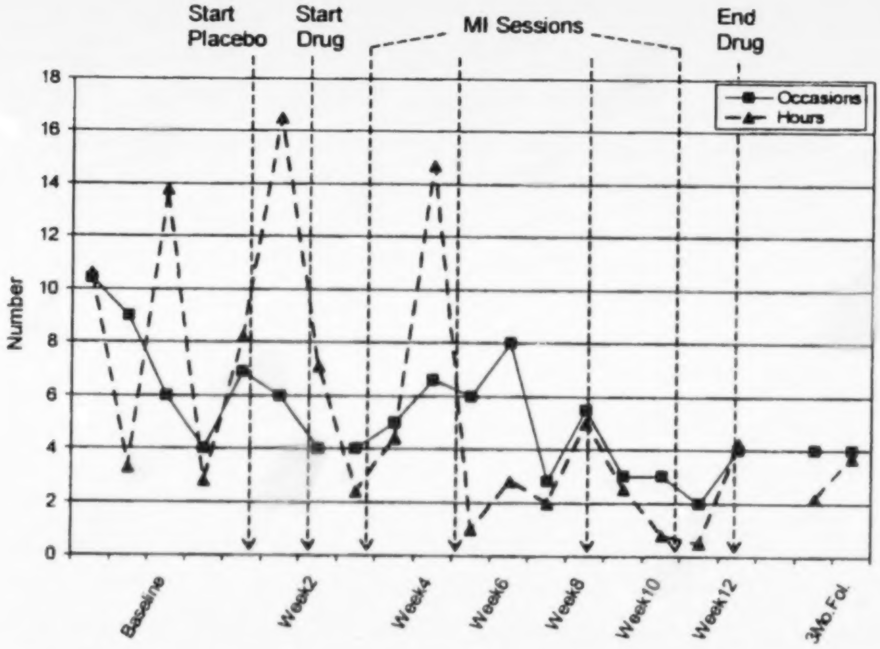

FIGURE 1 Weekly number of gambling occasions and hours spent on gambling.

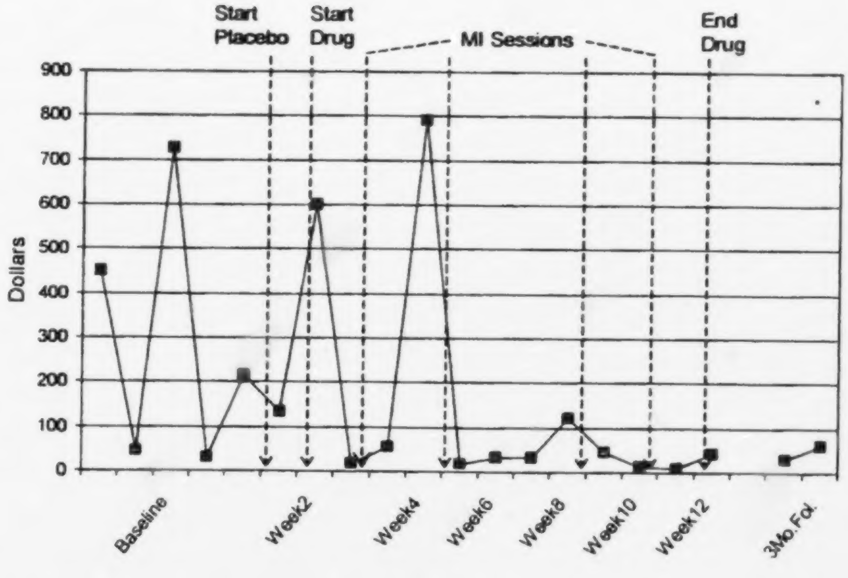

FIGURE 2 Weekly Gambling Spending

Meaningful change occurred, however, in L's self-reported mood data. At Week 2 L exhibited a substantial reduction in depressive symptoms, scoring a 5 on the BDI-II (in the nondepressed range). Appreciable changes in his scores on the POMS were seen as well, as his Week 2 Tension/Anxiety score was 52 and his Depression *T*-score was 54.

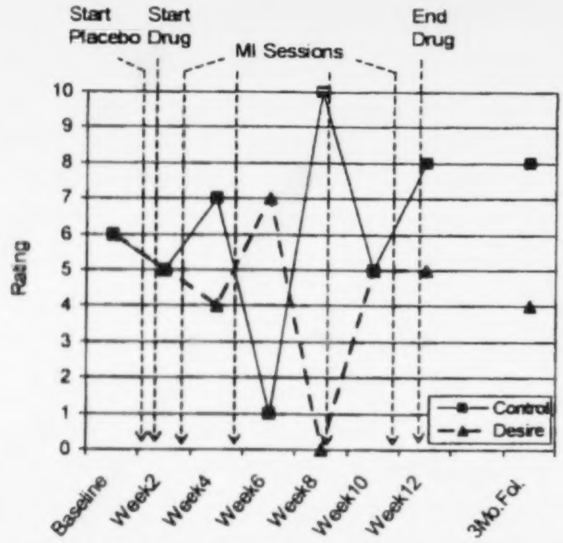

FIGURE 3 Perceived Control Over Gambling and Desire to Gamble

These changes represent decreases of over two and nearly four *SD*'s, respectively (see Figure 4). L's Fatigue score of 44 constituted a 25 point reduction, his Confusion scored dropped by 34 points to 49, and his Anger/Hostility was reduced by 26 points to 50. His Vigor score increased by 13 points, to 53. Whereas all five baseline negative mood state scores could be considered clinically elevated, all were in the normal range by Week 2. L confirmed the improved mood indicated by his questionnaire data, stating, "I am very pleased that I entered the study… I can tell this is going to be good for me."

By Week 4 L had participated in his first MI session and been on fluoxetine for about two weeks. Little change had occurred in terms of his gambling behavior, as he averaged $288 spent per week, 5.2 gambling occasions per week, and 7.2 hours spent per week. He rated his control over gambling at 7 and his desire to gamble at 4 on the 11-point scale. As L completed the gambling measures, he made the observation that he "must really have a gambling problem." L's self-observation seemed to generate mild anxiety and discomfort for him. Yet, L's ability to reflect upon his gambling habits and his willingness to tolerate the negative feeling states that arose from this self-reflection were necessary ingredients for resolving ambivalence about his gambling.

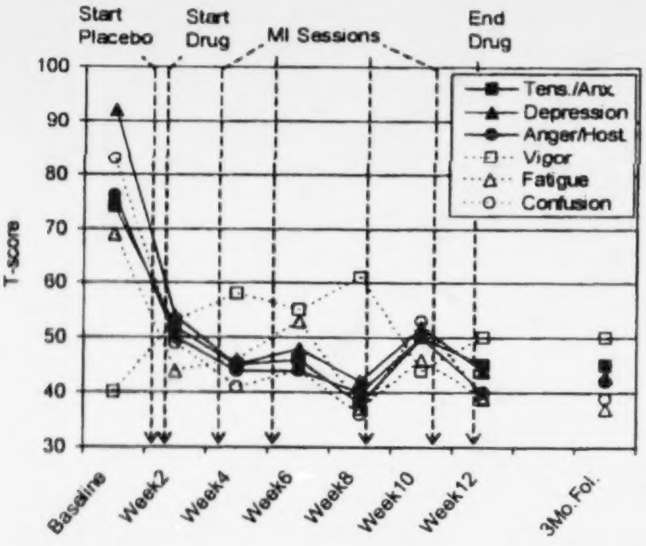

FIGURE 4 Profile of Mood States T-scores. "Tens./Anx." = Tension/Anxiety, "Anger/Host." = Anger/Hostility

L's mood symptoms remained improved, as his BDI-II score was 1. On the POMS, the changes that were seen at the Week 2 measurement continued to occur, as Vigor continued upward (to 58) and scores on most of the other scales decreased further.

L had completed his second MI session and four weeks on fluoxetine by Week 6, and marked reductions in his gambling behavior were appearing. His spending per week for the prior two weeks had averaged $25.50, less than one tenth of his baseline spending. He had averaged 7 gambling occasions per week, but just under 2 hours spent per week.

Interestingly, he rated his control over gambling at 1 (very low) and his desire to gamble at 7 at the Week 6 visit. He obtained a score of 8 on the BDI-II, which falls in the non-depressed range. His POMS scores remained essentially unchanged from the previous visit, with the exception of a small increase of 7 points (to 53) on the Fatigue scale.

Although L was reporting reductions in his gambling behavior, and continued to report increases in positive mood states, during his second MI session he seemed to engage in rationalizing regarding possible future gambling episodes. L described past periods of gambling that had resulted in high stakes winnings of cash and automobiles, and suggested that if he "could just control (him)self," he would potentially increase the likelihood of winning big again. However, his response to reflective listening regarding his ambivalence to change was more sober, as L described the reality of his currently depressed standard of living and anticipated court appearance, both painful results of his problem gambling.

By the Week 8 visit, L had not yet had his third MI session. His weekly spending since Week 6 averaged $77.80, an increase, but far from a return to baseline levels. He had gambled approximately 4.2 times per week for 3.5 hours per week.

A drastic change occurred with respect to his self-reported cognitions about his gambling. He rated his control over his gambling at 10 (the maximum) and his desire to gamble at 0.

L's BDI-II score at Week 8 was 0. All five POMS T-scores for negative states reached new lows, as all were around one *SD* below 50. Fatigue dropped by 16 points from the previous measurement. A new high was obtained for Vigor, at 61.

During the MI session following L's self-report data in week 8, he explored the contrast between his continued gambling behavior and high rating of control over such behavior. Active listening during the MI session prompted L to contemplate the apparent risks he was taking, as he discussed his recent gambling behavior in the session. He described meeting a person at the casino whose life circumstances paralleled his own, and whom he had attempted to dissuade from gambling. After a short period of silence L stated, "It would probably be a good idea to follow my own advice." By not immediately commenting on L's previous statement, the therapist helped to elicit a self-motivational statement from the patient by allowing him time to recognize the discrepancy between his advice to others and his own behavior.

Just after the Week 8 visit, L had his third MI session. The data collected at Week 10 showed continued improvement with respect to gambling behavior. L had averaged $29.50 spent, 1.7 hours spent, and 3 gambling occasions per week.

His ratings of perceived control over gambling and desire to gamble (both 5), however, represented changes in the undesired directions from the previous measurement.

Some changes were seen in self-reported mood as well, as L's BDI-II score was 12 (falling in the mildly depressed range). The POMS showed increases for all of the negative mood scales, but none increased significantly beyond the 50-point mark. Vigor dropped considerably, by 17 points, to 44.

During his third MI session it was observed that L's increased level of awareness about the negative effects of his gambling behavior, and subsequent dysphoric mood, may have increased his desire for support from the therapist. L inquired if the MI sessions could occur weekly rather than every other week, and his interpersonal behavior suggested a desire to extend the length of his MI sessions and medication reviews with the psychiatrist. L was clearly very engaged in his treatment at this time.

Near the start of this final two-week period, L participated in his fourth and last MI session, and his course of fluoxetine treatment ended during this period. He had reported no side effects from taking the medication.

Week 12 data indicated that L's gambling behaviors had remained dramatically improved relative to baseline. The TLFB procedure showed that he had averaged $26.50 and 2.5 hours spent, and 3 gambling occasions per week. L was re-administered the SOGS, and asked to respond for the timeframe of the past three months. His score was 3, which is indicative of non-pathological gambling.

L reported a moderately high degree of perceived control over his gambling (8 on the 11-point scale) and moderate desire to gamble (5). He completed the OCDS (adapted for gambling) at Week 12, and his score of 18 compared favorably with his baseline score of 30.

L's score on the BDI-II at Week 12 was 0, and his six POMS T-scores ranged from 39 to 50.

L stated that he had looked forward to meeting for his MI sessions, despite experiencing feelings of mild anxiety. He stated of his behavior prior to entering the study, "I knew the road I was traveling on… and it wasn't good." Reflecting over the past three months, L indicated that the insight he had gained in his treatment had influenced him to seek the support of friends to help him maintain his gains by engaging in non-gambling social activities.

### 3-Month Follow-Up

At the 3-month follow-up visit, the TLFB procedure was conducted for the prior two weeks. L was shown to have averaged $45 spent per week, 4 gambling occasions per week, and 3 hours spent per week. On the GSI at baseline, L had rated how troubled or bothered he had been by gambling problems in the past month as 4 ("extremely"), but at follow-up he selected 0 ("not at all"). At baseline he had rated the importance of treatment for gambling problems to him as 4, and at follow-up he selected 2 ("moderately"). He reported that now he typically spent approximately $50 per week on gambling, whereas at baseline he had indicated $200-$300. He explained that he was satisfied with his present level of gambling-related spending.

L rated his control over gambling at 8 and his desire to gamble at 4 on the 11-point rating scale. On the OCDS (adapted for gambling) L scored an 11, as compared to 30 at baseline and 18 at the end of treatment.

On the BDI-II, L obtained a score of 0. His POMS scores were virtually identical to his Week 12 scores (all five negative mood states below 50, Vigor at 50).

The SOGS, which asked for L to consider only the last three months, yielded a score of 3, which falls in the non-pathological gambling range and is the same score he obtained at the end of the treatment phase (his SOGS at baseline was 18). L's PGD was determined to be in remission, as he no longer met any DSM-IV criteria for the disorder.

## DISCUSSION

A pathological gambler with secondary depression was treated with a combination of fluoxetine and four, 1-hour sessions of MI. Gambling behavior and depressed mood were reduced substantially, and the improvement was maintained at 3-month follow-up. The patient expressed considerable satisfaction with the results of his treatment, and although he was not abstaining from gambling at follow-up, he felt that his gambling had become manageable and acceptable to him. This study is the first published account of the treatment of a pathological gambler using MI in face-to-face meetings.

The present study demonstrates the feasibility of MI and fluoxetine for the treatment of pathological gambling. The techniques and "spirit" of MI were a good fit in terms of the problems that the patient brought to the sessions. The therapist, restricted to using only MI-based techniques, never encountered a situation with the patient in which there were no appropriate MI tools to use. Similarly, no problems were noted with respect to the fluoxetine treatment, either in terms of side effects, or compliance issues.

Single case designs are often criticized for their vulnerability to threats to internal validity. Change in the clinical case cannot be proved to be attributable to the treatment provided, and even if the treatment is responsible for the change, several alternative interpretations of the case might be equally viable (Kazdin, 1992). Recommendations have been made for the design of stronger case studies that greatly decrease concerns about internal validity. Kazdin (1992) argued that the internal validity of a case study is strengthened by, 1) collecting objective data rather than anecdotal report information; 2) assessing patient performance on multiple occasions (i.e., before, during and after treatment); and, 3) accumulating more than one case, especially if the cases are heterogeneous in terms of demographic characteristics. Given that a very similar outcome occurred with our other treatment completer (not reported here due to space limitations) the present study was faithful to all of these recommendations.

Although the primary emphasis in understanding the data in single-participant designs tends to be on inspecting data represented in graphed form, and statistical significance is generally not tested, the present study allowed for testing of the clinical significance of most of the treatment gains (Sylvain et al., 1997). A reduction in symptoms from baseline by 50% is a benchmark for clinical improvement that can be applied to many of the outcome variables in the present study, and the findings are generally favorable. For instance, L gambled at the rate of about $250 per week at baseline, about $27 per week at the end of treatment, and $50 per week at 3-month follow-up. Thus, he achieved and maintained clinically significant improvements in gambling spending. The reductions that were seen in hours spent and number of gambling occasions per week, also constitute clinically significant improvements. Relative to baseline, the patient achieved lasting clinically significant improvement in some mood symptoms (e.g., as indicated by BDI-II scores), as well.

Another way to judge the success of a treatment intervention in a single case research design is to measure end-state functioning and compare it to an established criterion (Sylvain et al., 1997). The DSM-IV threshold for the diagnosis of PGD is five of ten criteria met. In the present study, the patient met no DSM-IV criteria at follow-up. On the SOGS, the established cut-point for probable pathological gambling is 5. At the end of treatment, the patient's SOGS score was below this threshold, and it remained unchanged at follow-up. At the end of treatment and at follow-up, all of L's POMS scores were in the normal range for non-patients.

With respect to the patient's ratings of desire to gamble and perceived control over gambling behavior (self-efficacy), Sylvain et al. (1997) offered cut-points for the 11-point scale derived from previous research. These researchers suggested that 7 or higher can be considered significant perceived control, and 3 or lower can be thought of as significantly low desire to gamble. Using these criteria, the findings of the present study were mixed. The patient rated his perceived control over his gambling as higher than 7, both at the end of treatment and at follow-up. However, he rated his desire to gamble as greater than 3 at both of these time points.

Single participant research designs have important limitations, not the least of which is the absence of an untreated control group. The lack of an appropriate comparison group in such designs prevents the researcher from ruling out that the participants' improvement might have been attributable to the mere passage of time or hopeful expectations (placebo effect), rather than to the treatment provided. The present study suffers from this limitation, despite the steps taken to minimize it (Kazdin, 1992), but the data do provide some hints about what might have been the causal agents in the improvement that was seen. The patient continued to gamble heavily during the two-week placebo lead-in phase, indicating that a placebo effect, at least in terms of the medication component to his treatment, is unlikely to have been the cause of his later improvement in gambling behavior. A placebo effect in terms of the therapy intervention cannot be ruled out, since there was not a control condition in which patient received an "inert" form of psychotherapy. Thus, it may have been positive expectations due to participating in any kind of therapy that resulted in the improvement seen.

The fact that the improvements in gambling behavior were maintained after the fluoxetine was discontinued, suggests that, to the extent that there was a medication effect, it was not needed to maintain the gains made, at least for three months. It would appear that a medication effect in this study could have been a "jumpstart" to assist the MI process.

The patient in the present study experienced a sharp decrease in negative mood symptoms during the placebo lead-in phase, so it is possible that a placebo effect occurred selectively for mood. The four MI sessions did not address negative mood directly, so if the sessions had any effect on mood, it must have been an indirect one (e.g., feeling better in response to improvement in gambling behaviors). A therapy effect on mood could only have maintained the improvement that the patient had already experienced before starting the MI sessions.

A limitation of the present study is the extent to which there may have been selection biases at work in terms of enrollment in and completion of the treatment. Although this problem is ubiquitous in research that requires volunteering participants, it raises the potential issue that the individual may have been ready to change and would have done so regardless of any type of intervention. However, some anecdotal evidence suggests that the patient may not have been in such a high state of readiness. L canceled his first appointment twice, stating in a phone conversation with the study therapist that he felt he was not ready, saying, "I just don't know... What do you think I should do?" The therapist used MI techniques, emphasizing that it was entirely up to L, who did show for his third appointment.

In sum, our case study demonstrated the utility of four sessions of Motivational Interviewing in combination with fluoxetine over a 10-week treatment period. Gambling behavior and depressive symptoms were substantially reduced and maintained over the course of treatment and at 3-month follow-up. The next step is to employ large scale, controlled trials of MI and fluoxetine (alone and in combination) for pathological gambling.

## REFERENCES

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4 ed.). Washington, DC: American Psychiatric Association.

Anton, R. F., Moak, D. H., & Latham, P. (1995). The Obsessive Compulsive Drinking Scale: A self-rated instrument for the quantification of thoughts about alcohol and drinking behavior. *Alcoholism: Clinical & Experimental Research, 19*, 92-99.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *The Beck Depression Inventory II Manual*. Orlando, FL: Harcourt Brace & Company.

Black, D. W., & Moyer, T. (1998). Clinical features and psychiatric comorbidity of subjects with pathological gambling behavior. *Psychiatric Services, 49*(11), 1434-1439.

Blampied, N. M. (2000). Single-case research designs: A neglected alternative. *American Psychologist, 55*(8), 960.

Borsari, B., & Carey, K. B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology, 68*(4), 728-733.

Bujold, A., Ladouceur, R., Sylvain, C., & Boisvert, J. M. (1994). Treatment of pathological gamblers: An experimental study. *Journal of Behavior Therapy and Experimental Psychiatry, 25*, 275-282.

Childers, R. R., Kuentzel, J. G., & Henderson, M. J. (2001, December). *Application of Motivational Enhancement Therapy to a cognitively impaired pathological gambler: A single-case design.* Poster session presented at the Convention of the National Center for Responsible Gaming, Las Vegas, NV.

Crockford, D., & el-Guebaly, N. (1998). Psychiatric comorbidity in pathological gambling: A critical review. *Canadian Journal of Psychiatry, 43*, 43-50.

DeCaria, C. M., Hollander, E., Grossman, R., Wong, C. M., Mosovich, S. A., & Cherkasky, S. (1996). Diagnosis, neurobiology, and treatment of pathological gambling. *Journal of Clinical Psychiatry, 57*, 80-84.

Elliott, R. (2002). Hermeneutic single-case efficacy design. *Psychotherapy Research, 12*(1), 1-21.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1995). *Structured Clinical Interview for DSM-IV Disorders-Patient Edition (SCID-I/P, Version 2.0).* New York: Biometrics Research Department, New York State Psychiatric Institute.

Hodgins, D. C., Currie, S. R., & el-Guebaly, N. (2001). Motivational enhancement and self-help treatments for problem gambling. *Journal of Consulting and Clinical Psychology, 69*(1), 50-57.

Hollander, E., DeCaria, C. M., Finkell, J. N., Begaz, T., Wong, C. M., & Cartwright, C. (2000). A randomized double-blind fluvoxamine/placebo crossover trial in pathologic gambling. *Biological Psychiatry, 47*, 813-817.

Hollander, E., DeCaria, C. M., Mari, E., Wong, C. M., Mosovich, S., Grossman, R., et al. (1998). Short-term single-blind fluvoxamine treatment of pathological gambling. *American Journal of Psychiatry, 155*(12), 1781-1783.

Hollander, E., Frenkel, M., DeCaria, C. M., Trungold, S., & Stein, D. J. (1992). Treatment of pathological gambling with clomipramine. *American Journal of Psychiatry, 149*(5), 710-711.

Ibanez, A., Blanco, C., & Saiz-Ruiz, J. (2002). Neurobiology and genetics of pathological gambling. *Psychiatric Annals, 32*(3), 181-185.

Kazdin, A. E. (1992). Drawing valid inferences from case studies. In A. E. Kazdin (Ed.), *Methodological issues & strategies in clinical research* (pp. 475-490). Washington, DC: American Psychological Association.

Lesieur, H. R., & Blume, S. B. (1987). The *South Oaks Gambling Screen* (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*(9), 1184-1188.

Lesieur, H. R., & Blume, S. B. (1992). Modifying the Addiction Severity Index for use with pathological gamblers. *American Journal on Addictions, 1*(3), 240-247.

McLellan, A. T., Luborsky, L., O'Brien, C. P., & Woody, G. E. (1980). An improved diagnostic instrument for substance abuse patients: The *Addiction Severity Index*. *Journal of Nervous and Mental Disease, 168*, 26-33.

McNair, D. M., Lorr, M., & Droppleman, L. F. (1981). *Profile of Mood States*. San Diego, CA: Educational and Industrial Testing Service.

Miller, W. R. (1996). Motivational Interviewing: Research, practice, and puzzles. *Addictive Behaviors, 21*(6), 835-842.

Miller, W. R., Benefield, R. G., & Tonigan, J. S. (1993). Enhancing motivation for change in problem drinking: A controlled comparison of two therapist styles. *Journal of Consulting and Clinical Psychology, 61*(455-461).

Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behaviors*. New York, NY: Guilford Press.

Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change (2nd ed.)*. New York, NY: Guilford Press.

Miller, W. R., Zweben, A., DiClemente, C. C., & Rychtarik, R. G. (1992). *Motivational enhancement therapy manual: A clinical research guide for therapists treating individuals with alcohol abuse and dependence* (Project MATCH Monograph Series). Washington, DC: National Institute on Alcohol Abuse and Alcoholism.

Moreno, I., Saiz-Ruiz, J., & Lopez-Ibor, J. J. (1991). Serotonin and gambling dependence. *Human Psychopharmacology: Clinical and Experimental, 6*, 9-12.

Morgan, D. L., & Morgan, R. K. (2001). Single-participant research design: Bringing science to managed care. *American Psychologist, 56*(2), 119-127.

Nyenhuis, D. L., Yamamoto, C., Luchetta, T., Terrien, A., & Parmentier, A. (1999). Adult and geriatric normative data and validation of the *Profile of Mood States*. *Journal of Clinical Psychology, 55*(1), 79-86.

Petry, N. M., & Armentano, C. (1999). Prevalence, assessment, and treatment of Pathological Gambling Disorder: A review. *Psychiatric Services, 50*, 1021-1027.

*Physicians' Desk Reference (57th Edition)*. (2003). Montvale, NJ: Thomson PDR.

Project MATCH Research Group (1997). Matching alcoholism treatments to client heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol, 58*(1), 7-29.

Project MATCH Research Group (1998). Matching alcoholism treatments to client heterogeneity: Project MATCH three-year drinking outcomes. *Alcoholism: Clinical & Experimental Research. 22*(6). 1300-1311.

Rollnick. S.. & Miller. W. R. (1995). What is motivational interviewing? *Behavioral and Cognitive Psychotherapy. 23*(4) 325-334.

Schaffer. H. J.. Hall. M. N.. & Vander Bilt. J. (1999). Estimating the prevalence of disordered gambling behavior in the United States and Canada: A research synthesis. *American Journal of Public Health. 89*(9). 1369-1376.

Senft. R. A.. Polen. M. R.. Freeborn. D. K.. & Hollis. J. F. (1997). Brief intervention in a primary care setting for hazardous drinkers. *American Journal of Preventive Medicine. 13*(6). 464-470.

Sobell. L. C.. & Sobell. M. B. (1996). *Alcohol Timeline Followback (TLFB) Users' Manual*. Toronto, Canada: Addiction Research Foundation.

Stein. D. J.. Hollander. E.. & Liebowitz. M. R. (1993). Neurobiology of impulsivity and impulse control disorders. *Journal of Neuropsychiatry. 5*. 9-17.

Stinchfield. R. (2002). Reliability. validity. and classification accuracy of the South Oaks Gambling Screen (SOGS). *Addictive Behaviors. 27*. 1-19.

Sylvain. C.. Ladouceur. R.. & Boisvert. J. M. (1997). Cognitive and behavioral treatment of pathological gambling: A controlled study. *Journal of Consulting and Clinical Psychology. 65*(5). 727-732.

---

*Author Note*: *Jeffrey G. Kuentzel, PhD*. is Associate Director of the Wayne State University Psychology Clinic and Clinical Assistant Professor in the Department of Psychology. Wayne State University. Detroit. MI. U.S.A. *Melinda J. Henderson, PhD*. is Director of the Wayne State University Psychology Clinic and Assistant Professor. Department of Psychology. Wayne State University.

*Joseph J. Zambo, MA*. is a doctoral student in the College of Education. Wayne State University. *Susan M. Stine, MD. PhD*. is Director of Psychiatric Services. Jefferson Avenue Research Clinic. Wayne State University School of Medicine. and Associate Professor. Department of Psychiatry and Behavioral Neurosciences. Wayne State University School of Medicine. *Charles R. Schuster, PhD*. is Director of the Clinical Research Division on Substance Abuse. Wayne State University School of Medicine. and Professor in the Department of Psychiatry and Behavioral Neurosciences. Wayne State University School of Medicine.

The authors would like to gratefully acknowledge the support of Eli Lilly and Company. We also thank Elise Pfeifer Hodges and Douglas A. MacDonald for their helpful comments on this paper. Portions of this paper were presented at the Convention of the National Center for Responsible Gaming. on December 2. 2001. Las Vegas. NV.

Footnotes

[1] It was not possible to determine the effects of these changes in wording on the validity of this measure. However, for both study completers, the data yielded by the instrument were consistent with investigator expectations and mirrored the changes that were documented using measures with established psychometric properties.

[2] The dollars spent values that are reported in gambling research can have different meanings. Of course, in the course of a gambling session a gambler typically receives some winnings while spending money. For the case presented in this paper, winnings were usually spent during the session. Although it could be argued that these winnings constitute gambling spending, we were not able to collect data on winnings spent. So, if L entered a casino with $100 to spend, and left when he ran out of money, this would be recorded for this research as $100 spent.

# Examining the Relationship Between Need for Cognition and the Muller-Lyer Illusion

Christopher Koch and Elissa S. Hayworth
*George Fox University*

Social psychologists often use principles from cognitive psychology to help explain how people perceive social situations. One common term in social cognition is need for cognition. Need for cognition refers to enjoying thinking and problem solving. This study addresses whether or not need for cognition influences how people process perceptual tasks as well. Twenty-one graduate and 24 undergraduate students completed the *Need for Cognition Scale* and adjusted line lengths in a Muller-Lyer task. The amount of time to complete the trials as well as the amount of over-adjustment was recorded. Although there was a trend for greater accuracy with higher need for cognition, this trend was not significant. However, those higher in need for cognition did take significantly longer to complete the task.

Lindsay and Norman (1977) described people as information processors. Research, particularly in the area of social cognition, has typically focused on situational factors that influence when individuals engage in effortful processing or take mental shortcuts (Kahneman, Slovic, & Tversky, 1982). However, individual differences also contribute to the type of processing an individual engages in. Cacioppo and Petty (1982), for instance, proposed the concept of need for cognition as one individual difference to account for variations across individuals in information processing. Those who are low in need for cognition tend to consider surface characteristics of a situation instead of engaging in a careful analysis of the details like those high in need for cognition (Cacioppo, Petty, Feinstein, & Jarris, 1996). This difference between people low and high in need for cognition is particularly evident under conditions of low personal relevance. Those high in need for cognition examine the quality of a set of arguments regardless of personal relevance while low need for cognition individuals only do so under conditions of high personal relevance (Cacioppo, Petty, Kao, & Rodriguez, 1986).

Although need for cognition has proven to be a useful construct for explaining individual differences in social situations (Cacioppo, Petty, Feinstein, & Jarris, 1996), it has not been determined the extent to which

---

*Author Info*: Correspondence should be sent to: Chris Koch, Ph.D., Dept. of Psychology, George Fox University, 414 N. Meridian, Newberg, OR 97132. e-mail at: ckoch@georgefox.edu.

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 249-256.

© NAJP

need for cognition is also a useful construct for explaining individual differences on other cognitive tasks. For instance, need for cognition is not related to face memory (Mueller, Keller, & Dandoy, 1989) although those high in need for cognition show less of a primacy effect than those low in need for cognition (Ahlering & Parker, 1989). Individuals high in need for cognition also recall more action-related details than low need for cognition individuals when looking at a sequence of behaviors (Lassiter, Briggs, & Bowman, 1991). Baugh and Mason (1986) found that individuals high in need for cognition underestimated time intervals while performing an anagram task but were not significantly better at solving the anagrams.

Memory, time perception, and anagram performance represent several areas of cognitive ability. Illusions, however, are often studied to determine when cognitive abilities fail. The Muller-Lyer illusion is perhaps one of the most well known and reliable visual illusions (Lindauer, 1973). The Muller-Lyer illusion commonly consists of two lines, one with inward facing arrows on both ends and one with outward facing arrows. Although the lines are the same size, the one with the outward facing arrows appears longer than the one with the inward facing arrows. The illusion is often explained in terms of size constancy (Coren & Girgus, 1978; Gregory, 1966; Madden & Burt, 1981; Nijhawan, 1991; cf., Griggs, 1974). According to this view, the inward facing arrows make one line look closer and the outward facing arrows make the other line look farther away. If two lines are the same size but one is farther away it is perceived as being bigger than the closer line in order to accommodate distance. This explanation is consistent with the "carpentered world" findings in which people living in carpentered worlds with right angles perceive size, and the Muller-Lyer illusion, differently than those in non-carptentered worlds (Coren & Girgus, 1978; Gregory, 1966; Segall, Campbell, & Herskovits, 1966).

There have been relatively few studies examining individual differences with the Muller-Lyer illusion. Versey (1975) examined how the Piaget, Inhelder, & Szeminska (1960) idea of conservation related to the Muller-Lyer illusion. He found that conservers made greater errors than non-conservers but only after approximately seven and a half years of age. Personality factors such as neuroticism and extraversion have not been found to be related to individual differences on the Muller-Lyer illusion (Eysenck & Slater, 1958; Mohan, Gupta, & Sharma, 1988; cf., Goldberg, 1979; Morrison, 1977). Individuals high in the need for achievement, however, have been found to be less susceptible to the Muller-Lyer illusion (Pandy & Jha, 1983). Atkinson (1994) found lower difference thresholds on the Muller-Lyer illusion among highly hypnotizable subjects under hypnosis. In addition, Broota and Kaur

(1987) found that schizophrenics made more errors on the Muller-Lyer illusion than normal controls (cf., Spaulding, 1978).

Unfortunately, these studies represent only a few of numerous potential individual differences. Hamilton (1966) suggested that individual differences such as intelligence and perceptual style may be useful in explaining the Muller-Lyer illusion. However, as Goldberg (1979) noted, the Muller-Lyer illusion is rarely used as a measure for examining individual differences. Therefore, the present study was conducted to determine if need for cognition is related to performance on a Muller-Lyer task. Specifically, it was anticipated that those high in need for cognition would spend more time thinking about the visual stimuli and consequently be more accurate in their estimates of line length.

## METHOD

### Participants

Twenty-one first year graduate students and 24 upper division undergraduate students volunteered to participate in the study. The sample consisted of 20 males and 25 females. All participants had normal or corrected to normal visual acuity. In addition, all participants were unfamiliar with the Muller-Lyer task used in the study.

### Material

Participants were given the *Need for Cognition Scale* (Cacioppo & Petty, 1982) along with a Muller-Lyer task. The *Need for Cognition Scale* is a 45-item questionnaire using a nine-point Likert scale ranging from -4 (Very Strong Disagreement) to +4 (Very Strong Agreement). Twenty-four of the items are reverse-scored. The need for cognition score is obtained by summing the scores for the individual items.

The Muller-Lyer task was presented on a computer and consisted of a single line with either a left or right-facing arrow at both ends of the line. When the end arrows were right facing, a left facing arrow was presented toward the middle of the line. However, when the end arrows were left facing the middle arrow faced right. The line was 21.6 cm long (subtending 17° VA at an approximate viewing distance of 70 cm). The lines making the arrows were 3.8 cm long and formed a 110° angle. The middle arrow was moveable. Pressing the "L" key moved the arrow to the left and the "R" key moved the arrow to the right.

### Procedure

Participants were given as much time as needed to complete the *Need for Cognition Scale*. Participants were then instructed that they would be shown a line with a moveable arrow. They were required to move the arrow to the left or right using the "L" or "R" keys until the arrow divided the line in half. When they are comfortable with their judgment they pressed "F" to end the trial. Four trials were presented. The four trials alternated between lines with right-facing end arrows and left-facing end arrows. The middle arrow varied in position across trials. On two trials the middle arrow was off-center to the right of the line (once with right-facing end arrows and once with left-facing end arrows) and on two trials the middle arrow was off-center to the left of the line. Although the distance of the middle arrow varied from the midpoint of the line across trials, the mean distance of middle arrow from the midpoint of the line was 3.2 cm (approximately 2.6° VA). Participants were not allowed to use their fingers (or any other type of measurement tool) to help determine the midpoint of the lines. The total time to complete all four trials was recorded. In addition, the percent over-adjustment for each trial was recorded.

## RESULTS

### Descriptive Statistics

The need for cognition scores ranged from –43 to 125 with a mean of 57.40 (*SD* = 41.37). Participants over-adjusted the line lengths 9.84% (*SD* = 3.04) on average. This means that they made the section of the line with the open ends of the arrows facing inward 9.84% longer than necessary to match the length of the line section with the outward facing arrows. The mean completion time of the task was 64.40 s (*SD* = 31.29). There were no differences between any of these measures in regard to sex or class standing (undergraduate versus graduate).

### Performance and Need for Cognition

Since the study was conducted to examine the relationship between need for cognition and performance on perceptual tasks, a correlational analysis was conducted. Need for cognition was significantly correlated with time taken to complete the task ($r = .35$, $p < .02$) but not with the amount of over-adjustment ($r = .09$, *NS*). This suggests that need for cognition may influence the amount of time participants spend thinking about their judgments of line length but it does not influence the accuracy of their judgments. This relationship was confirmed by dividing the sample into three groups based on need for cognition scores. Although there was no difference between those with the highest need for cognition scores and those with the lowest need for cognition scores in regard to over-adjustment, there was a significant difference between the groups in regard to time ($t_{(28)} = 3.16$, $p = .004$, $r = .51$). Interestingly, the amount of time taken to complete the task was negatively correlated with over-adjustment ($r = -.36$, $p < .02$) indicating that participants were more accurate in their judgments as they took more time to complete the task. However, since need for cognition was not correlated with over-adjustment, the relationship between time and over-adjustment appears to be due to a factor or factors other than need for cognition.

## DISCUSSION

This study was conducted to determine the relationship between need for cognition and processing perceptual tasks such as the Muller-Lyer illusion. As expected, processing time increased with need for cognition. However, need for cognition did not influence accuracy. Therefore, the present results suggest that need for cognition impacts the amount of time people spend thinking about the Muller-Lyer illusion, but does not decrease susceptibility to the illusion.

Although the results for the amount of processing time were consistent with the literature concerning need for cognition, the accuracy results were not. For instance, Nair and Ramnarayan (2000) found that managers who were high in need for cognition were more successful in solving complex problems. Although the Muller-Lyer task presents a problem, line judgment, it is not a complex problem requiring multiple cognitive abilities, thereby potentially minimizing differences in need for cognition. However, English (1944) argued that errors made while examining illusions may be related to personal relevance. If a task is of low personal relevance to an individual, that individual is more likely to make errors in processing. The Muller-Lyer illusion represents a low relevance task. Therefore, individuals low in need for cognition would be expected to make more errors than those high in need for cognition (Cacioppo, Petty, Kao, & Rodriguez, 1986). In this study, however, no differences were found in accuracy between individuals low and high in the need for cognition. This pattern of findings could indicate that task complexity is more salient to need for cognition than task relevance or that need for cognition does not generalize to non-social cognitive tasks such as visual perception (specifically visual illusions).

Thus, the results suggest that while processing time may increase for those high in need for cognition and that processing time is associated with accuracy, accuracy is not impacted by need for cognition. Thus, the results lead to the somewhat counterintuitive conclusion concerning need for cognition. Specifically, need for cognition may contribute to thinking for longer periods of time and in greater detail about some problem; however, judgment accuracy may not improve and if it does, it may not be related to need for cognition. This finding is particularly interesting considering Coren and Girgus (1974) found that the Muller-Lyer illusion can be influenced by higher level or central processing. Additional research, therefore, needs to be conducted to examine the extent to which need for cognition is related to other cognitive abilities, and to assess at what point in a variety of situations and tasks heuristic and purposeful thinking produce noticeable differences in performance.

## REFERENCES

Ahlering, R. F., Parker, L. D. (1989). Need for cognition as a moderator of the primacy effect. *Journal of Research in Personality, 23*, 313-317.

Atkinson, R. P. (1994). Individual variability in Muller-Lyer illusion difference thresholds: Moderating influences of hypnotic susceptibility in waking and hypnosis. *Imagination, Cognition & Personality, 13*, 323-333.

Baugh, B. T., & Mason, S. E. (1986). Need for cognition related to time perception. *Perceptual and Motor Skills, 62*, 540-542.

Broota, A. & Kaur, H. (1987). Extent of illusion in schizophrenics. *Journal of Personality & Clinical Studies, 3*, 123-126.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42, 116-131.*

Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin, 119*, 197-253.

Cacioppo, J. T., Petty, R. E., Kao, C. F., & Rodriguez, R. (1986). Central and peripheral routes to persuasion: An individual differences perspective. *Journal of Personality and Social Psychology, 51*, 1032-1043.

Coren, S., & Girgus, J. S. (1978). *Seeing is deceiving: The psychology of visual illusions*. Hillsdale, NJ: Erlbaum.

Coren, S., & Girgus, J. S. (1974). Transfer of illusion decrement as a function of perceived similarity. *Journal of Experimental Psychology, 102*, 881-887.

English, H. B. (1944). Illusion and error in personalistic act psychology. *American Journal of Psychology, 57*, 563-565.

Eysenck, H. J., & Slater, P. (1958). Effects of practice and rest on fluctuations in the Muller-Lyer illusion. *British Journal of Psychology, 49*, 246-256.

Goldberg, L. R. (1979). A general scheme for the analytic decomposition of objective test scores: Illustrative demonstrations using the rod-and-frame test and the Muller-Lyer illusion. *Journal of Research in Personality, 13*, 245-265.

Gregory, R. L. (1966). *Eye and brain*. New York: World University Library.

Griggs, R. (1974). Constancy scaling theory and the Muller-Lyer illusion: More disconfirming evidence. *Bulletin of the Psychonomic Society, 4*, 168-170.

Hamilton, V. (1966). Susceptibility to the Muller-Lyer illusion and its relationship to differences in size contancy. *Quarterly Journal of Experimental Psychology, 18*, 63-72.

Kahneman, D., Stovic, P., & Tversky, A. (1982). *Judgment under uncertainty: Heuristics and biases.* New York: Cambridge University Press.

Lassiter, G. D., Briggs, M. A., & Bowman, R. E. (1991). Need for cognition and the perception of ongoing behavior. *Personality & Social Psychology Bulletin, 17*, 156-160.

Lindauer, M. S. (1973). Extent of illusory effects for 32 illusions. *Perceptual & Motor Skills, 36*, 887-894.

Lindsay, P. H., & Norman, D. A. (1977). *Human information processing*, 2nd ed. New York: Academic Press.

Madden, T. M., & Burt, G. S. (1981). Inappropriate constancy scaling theory and the Muller-Lyer illusion. *Perceptual and Motor Skills, 52*, 211-218.

Mohan, V., Gupta, V. K., Sharma, S. (1988). Effect of extraversion, neuroticism, and frequency of KR on the reduction of Muller-Lyer illusion. *Psychological Studies, 33*, 6-9.

Morrison, L. C. (1977). Inappropriate constancy scaling as a factor in the Muller-Lyer illusion. *British Journal of Psychology, 68*, 23-27.

Mueller, J. H., Keller, T., & Dandoy, A. (1989). Face memory and spontaneous personality processing. *Bulletin of the Psychonomic Society, 27*, 103-106.

Nair, K. U., & Ramnarayan, S. (2000). Individual differences in need for cognition and complex problem solving. *Journal of Research in Personality, 34*, 305-328.

Nijhawan, R. (1991). Three-dimensional Muller-Lyer illusion. *Perception & Psychophysics, 49*, 333-341.

Pandey, R. P., & Jha, J. L. (1983). Need-achievers and Muller-Lyer illusion. *Asian Journal of Psychology & Education, 12*, 31-33.

Piaget, J., Ihelder, B., & Szeminska, A. (1960). *The child's conception of geometry*. Oxford, England: Basic Books.

Segall, M. H., Campbell, D. T., & Herskovits, M. J. (1966). *The influence of culture on visual perception*. Indianapolis: Bobbs-Merrill.

Spaulding, W. (1978). The relationship of some information-processing factors to severely disturbed behavior. *Journal of Nervous & Mental Disease, 166*, 417-428.

Versey, J. (1975). Conservation of length and the Muller-Lyer illusion. *Perceptual and Motor Skills, 40*, 658.

# Analysis of Career Information in Introductory Psychology Textbooks: Methods and Findings

Shawna L. Anderson, William J. A. Eiler, II,
and D. W. Rajecki
*Indiana University-Purdue University Indianapolis*

The study compared word counts of career information in 44 introductory psychology textbook chapters (circa 1992-2002) with counts from 4 career appendixes. Most words in appendixes (70.6%) were devoted to advice on various career pathways (i.e., life with a baccalaureate vs. graduate school and professional development), whereas the bulk of words in chapters (58.5%) were devoted to subfield details. Regarding chapters, 98% provided 0 words on gaining employment with a baccalaureate, 96% said nothing about graduate school, and 36% made no mention of professional degrees and credentials. We recommend that introductory textbook chapters contain more comprehensive career content.

We present word-count content analyses to promote a discussion of what kind and how much career information should appear in introductory psychology textbooks. Most such books provide a short, early section that describes the field's many branches and activities. We name these sections the "what psychologists do" unit, a term borrowed from an American Psychological Association (APA) career booklet (APA, 1996). The textbooks we analyzed for this report contained a mean of 660 chapter pages, and information regarding psychology as a contemporary profession was offered, on average, within the first 18 pages. Thus, before the beginning psychology student reads much else about the discipline, she or he is usually told that many people make a living at it, and in many settings.

The "what psychologists do" unit in introductory psychology textbooks can be viewed in terms of a continuum, with recruiting at one end and advising at the other. Regarding recruiting, one implicit aim of such units may be to draw undergraduates into the field. This aim is in line with an explicit goal of APA Division Two–the Society for the Teaching of Psychology–namely, to "[encourage] students to major in psychology" (Society for the Teaching of Psychology, 2002, p. 261). One way these books recruit is to describe exciting advances in subfields of psychology, and to show (with engaging photographs) various

---

*Author info*: Correspondence should be sent to: Dr. D. W. Rajecki, Dept. of Psych., LD 124, IUPUI, 402 N. Blackford St., Indianapolis, IN 46202 – 3275. E-mail drajecki@iupui.edu.

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 257-268.

©NAJP

professional psychologists in action. Another way is to describe the material and personal rewards of involvement in psychology.

If recruiting is a priority, then introductory books should also offer detailed advising on specific career paths, including the realities of post-graduate training necessary for true professional standing, and the likelihood and type of immediate employment with a terminal baccalaureate. Our contention, and the rationale for of our research, is that text chapters typically lack a healthy balance in this regard, with recruiting as the primary objective.

This project informed the discussion by developing a quantitative content analysis of types and patterns of career information, comparing selected recent treatments of these issues (circa 1992-2002) found in textbook chapters versus appendixes. We identified two broad categories of subject matter: (1) details of the specific subfields or specialties within psychology, and (2) other textual materials that provided the reader with a more general orientation across the field of psychology. Previous textbook researchers quantified selected psychology subfield representations (e.g., counseling: Dixon, Vrochopoulos, & Burton, 1997; I/O: Maynard, Geberth, & Joseph, 2002), but not in the context of career considerations.

## METHOD

Based on trial and error, we eventually employed a total of 34 coding labels. Twenty-five of these labels identified professional psychology's many subfields, and the remaining nine covered general orientation perspectives.

### Subfield Details

Regarding subfields, we settled on 24 conventional areas (e.g., biological, clinical, developmental, I/O) including a residual category of "other." Psychiatry was included as a 25th area because many writers compared and contrasted that domain with clinical and counseling psychology. Further, several writers drew a distinction between the historic subfield of experimental psychology (e.g., perception, motivation, learning) and the wide use of experimentation in many other subfields, so our coding reflected that distinction. Finally, word totals devoted to the growing field of clinical neuropsychology were split between biological and clinical psychology.

### Orientation Perspectives

Regarding orientation perspectives, Appendix A outlines the nine coding labels for textual content that provided a more general orientation to professional psychology. These orientation topics can be clustered within three perspectives. The first perspective covered the discipline, having four coding labels: background, workplaces, benefits, and drawbacks. The second perspective covered professional pathways, having three coding labels: graduate school, degrees and credentials, and more information about professional careers. The third perspective covered life with a BA/BS, having two coding labels: everyday value, and gaining employment.

**Coding Procedure**

*Segments of information.* Before counting any words, we separated authors' statements into distinctive topical segments in terms of the 34 subfield and orientation coding slots described in previous sections. To arrive at a distinctive segment of information we often dismantled a paragraph or sentence into its component parts. Thus, in some cases a resulting single-topic segment was as large as the original text paragraph or sentence, while in other cases it amounted to something shorter.

Two demonstrations of this procedure will help clarify our actions. The first involves the dismantling of a single hypothetical text paragraph:

> Efforts toward preventing illness, rather than merely treating it, require that psychologists teach people how to make healthy behavior a regular habit [22 words coded as subfield: health psychology]. Indeed, many of the challenges facing society today are problems involving attitudes and behavior, including substance abuse, sexually-transmitted disease, and interpersonal violence [22 words coded as orientation: background]. Psychologists in laboratories and other institutions contribute solutions to problems through the careful collection, analysis, and publication of data [19 words coded as orientation: workplaces].

The second demonstration involves the dismantling of a single hypothetical text sentence:

> Frankly, psychology is not the right career for someone who is looking for a quick route to a safe, secure way to make a living [25 words coded as orientation: drawbacks], but it is for a person whose excitement about the field draws him or her irresistibly to it [18 words coded as orientation: benefits].

Finally, in some cases an original piece of writing covered two or more topics, but we could not reasonably reduce it to component parts. Hypothetically:

> Psychiatrists and clinical psychologists often provide similar services--called talk therapy--for most clients: they listen, ask questions, and try to give advice.

In this case the resulting word count (23) was divided between the psychiatry and clinical psychology subfields.

*Coding priorities.* Specific topics were of special interest to us, and we believed they should be given proper weight. We therefore developed two special coding rules to achieve these priorities. First, because students need to appreciate the educational and professional standards psychologists must meet, when the matter of degrees and credentials was involved in a text segment we gave it greater weight than other topics in the passage. Consider this hypothetical sentence:

> I/O psychologists, who study people under working conditions, find employment in businesses or universities, but must first complete rigorous postgraduate training in a master's (usually 2-3 years), or a doctoral program (usually 4-6 years).

Although the passage contains mention of a subfield, we assigned the total word count (34) to the orientation category of degrees and credentials.

Second, we believed that some types of information should supercede others: namely, that subfield should trump workplaces and benefits. Consider the following sentence.

> I/O psychologists, who study people under working conditions, find employment in businesses or universities.

Here, we assigned the total word count (14) to the subfield of I/O psychology.

**Chapters, Appendixes, and an APA Publication**

As listed in Appendix B, we assembled a convenience sample of 43 introductory textbooks having copyright dates ranging from 1992 to 2002. Preliminary analyses indicated no significant differences between chapter treatments in the older versus newer titles, so copyright date was eliminated from consideration.

Three of the 43 texts on hand (in Appendix B: Coon, 1995; Passer & Smith, 2001; Sdorow, 1998) included an appendix devoted to career considerations, and these passages were also analyzed. Further, APA published a career information booklet (APA, 1996). Like a chapter in a textbook, it contained an early "what psychologists do" unit. At the back of the APA booklet extensive orientation information appeared, as in an appendix. Because we wished to enlarge our sample of appendixes, we simply defined these APA materials, respectively, as a 44th chapter and a fourth appendix.

### Electronic Files and Inclusions

Mechanical word counts came from 48 electronic files, one for each chapter or appendix. To create a file, we photocopied relevant pages from a book, and manually cut-and-pasted their content for scanning or typing. Common sense and textbook authors' own headings guided our selection of pages. In general, it was clear where a "what psychologists do" unit began and ended. Materials that preceded and followed such a unit were explicitly addressed to different topics. Other career materials--such as separate lists of further readings and electronic resources--were also self-evident.

Once pages were identified, we made an effort to be inclusive. For example, in addition to sentences and paragraphs we included words from tables, charts, and figure and photo captions. However, we excluded free-standing headings that contained no substantive information, as well as cartoons, boxes, quizzes, exercises, summaries, and scholarly or literary quotations.

### Inter-Coder Agreement

Inter-coder agreement was addressed in two ways. One way involved the technique of discussion to agreement. The third author completed an initial coding and printout of all material in all 48 electronic files. The first author then proofed the printout and critiqued the initial codings. Disagreements between the coders were discussed to agreement, and the codings *and* the coding system were modified accordingly. The third author then coded all the material a second time, which was again proofed and critiqued by the first author. Discussions to agreement and further revisions followed. The first author then coded all the material for a third and final time.

A second reliability analysis was carried out along other lines. The third author selected and somewhat modified 18 of the many hundreds of orientation perspective segments in the database (see Appendix A). These segments were then coded in the blind by the first author, and were also separately coded several weeks later by the third author. Inter-coder agreement was 89%. When their separate codings were compared with standard instructions, we determined that each coder had made one miscoding. Thus, their individual accuracy was 94%.

## RESULTS

### Subfield Details

The four appendixes contained a total of only 227 words devoted to subfield details, so we excluded those passages from this particular descriptive analysis. For the 44 chapters, the subfield word total was 42,959 ($M = 976.3$).

We organized the 25 subfields under one of three domains: practice, research, and application. Regarding practice, the average chapter word counts, in descending order, were clinical (105.9), psychiatry (72.5), counseling (48.6), health (38.9), community (15.9), and rehabilitation (2.8). Regarding research, the descending order was biological (89.8), developmental (73.6), social (67.4), experimental (57.7), cognitive (48.3), personality (40.6), cross-cultural (35.4), quantitative (14.1), behavioral (14.0), and comparative (12.0). With respect to application, the order was industrial and organizational (70.2), school (39.2), engineering (38.6), educational (23.1), forensic (21.2), environmental (15.8), sport (11.6), and consumer (9.6). The residual 25th "other" category averaged 10.0 words.

**Orientation Perspectives**

As noted, appendixes contained very few words devoted to subfields, whereas chapters contained many. There were also striking differences between appendixes and chapters in the relative amounts of words devoted to the various orientation perspectives. Table 1 displays these overall patterns in terms of percentages. A clear majority of words in chapters were committed to subfield details (58.5%), whereas a clear majority of words in appendixes were committed to the specific orientation perspectives of professional pathways and life with a BA/BS (70.6%).

TABLE 1 Percentages of Total Words Devoted to Subfield Details and Orientation Perspectives in Appendixes and Chapters

| Subject matter | Appendixes | Chapters |
|---|---|---|
| Subfield details | 2.6% | 58.5% |
| Orientation perspectives | | |
| The discipline | 26.8 | 33.2 |
| Professional pathways | 52.2 | 5.0 |
| Life with a BA/BS | 18.4 | 3.3 |

*Appendixes vs. chapters.* We calculated a separate *t* test for each of the nine orientation rows in Table 2 based on an *n* of 4 for appendixes, and (excluding the four publications with appendixes) an *n* of 40 for chapters. Table 2 indicates that many strong differences emerged. Chapters devoted significantly more words to the background category.

But for the three professional pathways entries, and the two life with a BA/BS entries, appendixes provided much more coverage. For those five categories in Table 2, the appendix average word counts exceeded those of chapters by a ratio of about 12.0:1. Put another way, when the unit of analysis was changed from a word count to a chapter count, 98% of the chapters provided zero words on gaining employment with a baccalaureate, 96% said nothing about graduate school, and 36% made no mention of degrees and credentials.

As things turned out, appendixes displayed their own style of recruiting by featuring far more words ($M$ = 350.0) than chapters ($M$ = 21.2) on the topic of benefits. However, when the benefits average is compared with the average total for professional pathways and life with a BA/BS lines, advising in appendixes still exceeded recruiting by a ratio of about 4.5:1.

TABLE 2 Means (and Standard Deviations) of Word Counts for Orientation Perspectives in Appendixes and Chapters

| Orientation perspectives | Appendixes | Chapters | $t$ |
|---|---|---|---|
| The discipline | | | |
| Background | 158.5 (116.2) | 426.6 (258.3) | 2.04* |
| Workplaces | 55.3 (97.6) | 87.7 (78.8) | 0.77 |
| Benefits | 350.0 (332.7) | 21.2 (48.4) | 6.25** |
| Drawbacks | 32.5 (34.7) | 7.8 (33.1) | 1.42 |
| Professional pathways | | | |
| Graduate school | 379.5 (191.2) | 1.3 (8.2) | 13.95** |
| Degrees and credentials | 583.0 (216.3) | 61.3 (77.4) | 10.54** |
| More information | 199.3 (83.8) | 18.0 (35.6) | 8.44** |
| Life with a BA/BS | | | |
| Everyday value | 256.0 (214.2) | 49.1 (117.3) | 3.12** |
| Gaining employment | 154.0 (146.6) | 1.3 (8.2) | 7.28** |

*Note.* For appendixes $n = 4$; for chapters $n = 40$. *$p < .05$. **$p < .01$.

## DISCUSSION

On one hand, for a student seeking advice concerning professional career pathways or finding a job with a baccalaureate, an introductory textbook appendix is a good place to look. However, that student would be disappointed in the amount of attention the appendix devoted to subfield details (Table 1). Happily, our student need only turn to one of his or her book's early chapters for a concentrated coverage of subfields.

On the other hand, for a student seeking details about the subfields of psychology or background on the discipline, the typical introductory textbook chapter would be a good place to look. However, that student would be disappointed by the amount of attention the chapter devoted to advice about actual professional career pathways, or gaining employment with a baccalaureate (Table 2). Unhappily, if the book did not provide a career appendix, our student would probably have nowhere to turn for such advice.

These empirical distinctions between the content of the commonplace textbook chapter (the "what psychologists do" unit) versus the comparatively rare career appendix are the basis for our claim that texts in general lack a healthy balance between recruiting and advising. In other words, for the sample we examined, chapters generally recruited and appendixes generally advised.

The relative absence of more effective advising in such chapters is regrettable in light of a recent review of intersecting findings in the literature on career trends among U.S. psychology undergraduates:

–A majority of majors--including freshman–voice plans for graduate school and professional involvement.

–Students are not always clear on standards for admission to graduate school, and sometimes fail to take into account their own qualifications when making such plans.

–Their presumed plans notwithstanding, a majority of former majors do not enter graduate school, finding instead sometimes unsatisfactory employment with a baccalaureate (Rajecki & Anderson, in press).

To the extent that introductory psychology textbooks are responsible for drawing impressionable readers toward professional psychology (recruiting), they should also serve those readers with solid information about the hurdles and barriers to the profession (advising).

We further note that the number of career appendixes is not currently growing. The most recent Office of Teaching Resources in Psychology compendium (Koenig, Griggs, Marek, & Christopher, 2003) indicates that only two introductory texts now offer an appendix: Passer and Smith (2001), and Sternberg (2000). Therefore, one audience for our message includes textbook authors and editors. We recommend expanded coverage of important topics in Appendix A, especially those under the headings of professional pathways, and life with a BA/BS.

A second audience includes the teachers of psychology, in their classrooms and offices. Our challenge is that in the midst of most textbooks' generally incomplete coverage, instructors and advisers should take care to provide beginning students with adequate and balanced career information. Further, classroom instructors who *adopt* books should encourage publishers to increase relevant career coverage.

## REFERENCES

American Psychological Association. (1996). *Psychology/Careers for the twenty-first century.* Washington, DC: Author.

Dixon, D. N., Vrochopoulos, S., & Burton, J. (1997). Public image of counseling psychology: What introductory psychology textbooks say. *Counseling Psychologist, 25,* 674-682.

Koenig, C. S., Griggs, R. A., Marek, P., & Christopher, A. N. (2003). *A compendium of introductory psychology texts [Updated coverage: 2000-2003].* Retrieved March 11, 2003 from http://www.lemoyne.edu/OTRP/introtexts.html

Maynard, D. C., Geberth, K. L., & Joseph, T. A. (2002). Coverage of industrial/organizational psychology in introductory psychology textbooks: An update. *Teaching of Psychology, 29,* 154-157.

Passer, M. W., & Smith, R. E. (2001). *Psychology: Frontiers and applications.* New York: McGraw-Hill.

Rajecki, D. W., & Anderson, S. L. (in press). Career pathway information in introductory psychology textbooks. *Teaching of Psychology.*

Society for the Teaching of Psychology. (2002). 2003 teaching awards program announcement. *Teaching of Psychology, 29,* 261.

Sternberg, R. J. (2000). *Pathways to psychology* (2nd ed.). Belmont, CA: Wadsworth.

## APPENDIX A
## ORIENTATION PERSPECTIVES

**The Discipline**

*Background.*
- Philosophies/codes/principles/issues/controversies
- Professional pursuits: research/teaching/practice
- History/past growth/demographics
- Organizations (APA/APS)/subfield and divisional lists
- Popular assumptions/stereotypes/society's problems

*Workplaces (subfield unspecified).*
- Organizations/institutions/settings
- Job titles/activities

*Benefits.*
- Popularity of the major/current growth of field
- Personal interest/gratification/satisfaction/motivation
- Competitive edge
- Salary/financial aid
- Employment rates, optimistic

*Drawbacks.*
- Employment rates, pessimistic
- Professional/economic competition
- Financial burden
- What psychology cannot do

**Professional Pathways**

*Graduate school.*
- *Objective criteria (course credits, GPA, GRE)*
- *Non-objective criteria (letters, publications, awards)*
- *Acceptance rates/competition*
- *Steps to take*

*Degrees and credentials.*
- Degree level and professional standing
- Program length/required courses/accreditation
- Theses/dissertations/internships
- Certification/licensure

*More information about professional careers.*
- Full references/titles/addresses/websites
- Local counselor/career center

**Life with a BA/BS**

*Everyday value.*
- Real-life application/understanding
- Non-psychology career/job options/employable skills

*Gaining employment.*
- Criteria (skills/personality)
- Additional training (minor/non-psychology courses)
- Experience (volunteer/part-time work)
- Steps to take

## APPENDIX B

## REFERENCE INFORMATION FOR PUBLICATIONS USED IN THIS STUDY

American Psychological Association. (1996). *Psychology/Careers for the Twenty-First century.* Washington. DC: Author.

Atkinson. R. L.. Atkinson. R. C.. Smith. E. E.. Bem. D. J.. & Nolen-Hoeksema. S. (2000). *Hilgard's introduction to psychology* (13th ed.). Fort Worth. TX: Harcourt Brace.

Baron. R. A. (1998). *Psychology* (4th ed.). Needham Heights. MA: Allyn & Bacon.

Benjamin. L. T.. Jr.. Hopkins. J. R.. & Nation. J. R. (1994). *Psychology* (3rd ed.). Englewood Cliffs. NJ: Macmillan.

Bernstein. D. A.. Clarke-Stewart. A.. Roy. E. J.. & Wickens. C. D. (1997). *Psychology* (4th ed.). Boston: Houghton Mifflin.

Bourne. L. E.. Jr.. & Russo. N. F. (1998). *Psychology: Behavior in context.* New York: W. W. Norton.

Carlson. N. R.. & Buskist. W. (1997). *Psychology: The science of behavior.* Needham Heights. MA: Allyn & Bacon.

Coon. D. (1995). *Introduction to psychology: Exploration and application* (7th ed.). St. Paul. MN: West.

Crider. A. B.. Goethals. G. R.. Kavanaugh. R. D.. & Solomon. P. R. (1993). *Psychology* (4th ed.). New York: HarperCollins.

Davis. S. F.. & Palladino. J. J. (2000). *Psychology* (3rd ed.). Upper Saddle River. NJ: Prentice-Hall.

Dworetzky. J. P. (1997). *Psychology* (6th ed.). Pacific Grove. CA: Brooks/Cole.

Ettinger. R. H.. Crooks. R. L.. & Stein. J. (1994). *Psychology: Science. behavior. and life* (3rd ed.). Fort Worth. TX: Harcourt Brace.

Feldman. R.S. (1996). *Understanding psychology* (4th ed.). New York: McGraw-Hill.

Goldstein. E. B. (1994). *Psychology.* Pacific Grove. CA: Brooks/Cole.

Gray. P. (1999). *Psychology* (3rd ed.). New York: Worth.

Halonen. J. S.. & Santrock. J. W. (1996). *Psychology: Contexts of behavior* (2nd ed.). Dubuque. IA: Brown & Benchmark.

Hockenbury. D. H.. & Hockenbury. S. E. (1997). *Psychology.* New York: Worth.

Huffman. K.. Vernoy. M.. & Vernoy. J. (1994). *Psychology in action* (3rd ed.). New York: Wiley.

Kagan. J.. & Segal. J. (1995). *Psychology: An introduction* (8th ed.). Fort Worth. TX: Harcourt Brace.

Kalat. J. W. (2002). *Introduction to psychology* (6th ed.). Pacific Grove. CA: Wadsworth-Thompson Learning.

Kassin. S. (2001). *Psychology* (3rd ed.). Upper Saddle River. NJ: Prentice Hall.

Lahey. B. B. (1998). *Psychology: An introduction* (6th ed.). New York: McGraw-Hill.

Laird. J. D.. & Thompson. N. S. (1992). *Psychology.* Boston: Houghton Mifflin.

Lefton. L. A. (2000). *Psychology* (7th ed.). Needham Heights. MA: Allyn & Bacon.

Morris. C. G.. & Maisto. A. A. (1999). *Understanding psychology* (4th ed.). Upper Saddle River. NJ: Prentice Hall.

Myers. D. G. (1998). *Psychology* (5th ed.). New York: Worth.

Nairne. J. S. (1997). *Psychology: The adaptive mind.* Pacific Grove. CA: Brooks/Cole.

Passer. M. W.. & Smith. R. E. (2001). *Psychology: Frontiers and applications.* New York: McGraw-Hill.

Philipchalk. R. P.. & McConnell. J. V. (1994). *Understanding human behavior* (8th ed.). Fort Worth. TX: Harcourt Brace.

Plotnik. R. (1996). *Introduction to psychology* (4th ed.). Pacific Grove. CA: Brooks/Cole.

Rathus. S. A. (2000). *Psychology: The core.* Fort Worth. TX: Harcourt College.

Roediger. H. L.., III., Capaldi. E. D.. Paris. S. G.. Polivy. J.. & Herman. C. P. (1996). *Psychology* (4th ed.). St. Paul. MN: West.

Santrock. J. W. (2000). *Psychology* (6th ed.). New York: McGraw-Hill.

Sdorow. L. M. (1998). *Psychology* (4th ed.). New York: McGraw-Hill.

Seamon. J. G.. & Kenrick. D. T. (1994). *Psychology.* Englewood Cliffs. NJ: Prentice Hall.

Smith. B. D. (1998). *Psychology: Science & understanding.* New York: McGraw-Hill.

Sternberg. R. J. (1998). *In search of the human mind* (2nd ed.). Fort Worth. TX: Harcourt Brace.

Wade. C.. & Tavris. C. (1998). *Psychology* (5th ed.). New York: Addison Wesley Longman.

Wallace. P. M.. & Goldstein. J. H. (1997). *An introduction to psychology* (4th ed.). Dubuque. IA: Brown & Benchmark.

Weiten. W. (2000). *Psychology: Themes and variations* (4th ed., briefer version). Belmont. CA: Wadsworth.

Westen. D. (1996). *Psychology: Mind, brain, & culture.* New York: Wiley.

Wood. S. E.. & Wood. E. G. (1996). *The world of psychology* (2nd ed.). Needham Heights. MA: Allyn & Bacon.

Worchel. S.. & Shebilske. W. (1995). *Psychology: Principles and applications* (5th ed.). Englewood Cliffs. NJ: Prentice Hall.

Zimbardo. P. G.. & Gerrig. R. J. (1996). *Psychology and life* (14th ed.). New York: HarperCollins.

# The Aggressive Driving Behavior Scale: Developing a Self-Report Measure of Unsafe Driving Practices

John M. Houston, Paul B. Harris, and Marcia Norman
*Rollins College*

The purpose of this study was to investigate the reliability and validity of a new 11-item measure of aggressive driving, the Aggressive Driving Behavior Scale, which focuses on behaviors, rather than cognitions, emotions, or motivational states. Based on a sample of 211 undergraduates (111 women and 89 men), the study examined the convergent validity of the new scale with measures of hostility, hypercompetitiveness, and aggressive thoughts and emotions experienced while driving. A principal component analysis of the Aggressive Driving Behavior Scale ($\alpha = .80$) yielded two factors that form reliable subscales labeled Speeding and Conflict Behavior. As expected, the total scale and its two subscales correlated with hostility, hypercompetitiveness, as well as aggressive driving-related thoughts and emotions. The results suggest that the scale can be used as a research tool and a self-assessment instrument.

Aggressive driving is a dysfunctional pattern of social behaviors that constitutes a serious threat to public safety. Aggressive driving can involve a variety of behaviors including tailgating, honking, rude gesturing, flashing high beams at slower traffic, and speeding. The National Highway Traffic Safety Administration (2001) reports that aggressive driving is a major cause of traffic accidents and injury. In 2000, aggressive driving in the form of speeding alone contributed to 703,000 crash-related injuries and an additional 12,350 traffic fatalities. The NHTSA estimates that the economic cost of these crashes is over $27 billion per year.

Given the cost of aggressive driving in dollars and human lives, it is not surprising that this topic has developed a growing interest among the psychology community. Over the past decade researchers have developed a number of assessment instruments designed to measure different aspects of aggressive driving including driver stress (Glendon, Dorn, Matthews, Gulian, Davies, & Debney, 1993), situation specific anger (Deffenbacher, Oetting, & Lynch, 1994), deviant drivers' attitudes (Wiesenthal, Hennessy, & Gibson, 2000) and driving-related impatience,

*Author info*: Correspondence should be sent to: Dr. John Houston, Dept. of Psychology, Rollins College, 1000 Holt Avenue, Winter Park, FL 32789.

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 269-278.
© NAJP

anger, and punishing and competing behavior (Larson, 1996). In general, these measures focus on clusters of variables associated with aggressive driving such as mood states, cognitions, and coping responses. However, little research has systematically investigated the pattern of unsafe driving practices that characterize aggressive driving. Since researchers operationally define aggressive driving in a variety of ways, comparing results across studies can be problematic.

The purpose of this study was to develop a reliable and valid self-report measure of aggressive driving behavior. By defining aggressive driving as a pattern of unsafe driving behavior that puts the driver and/or others at risk, the scale was designed to measure those behaviors that others perceive as potentially aggressive and harmful.

For conceptual clarity, it should be noted that "aggression" is generally defined as physical or verbal behavior intended to hurt someone (Myers, 2002). However, as Feldman (1995) points out, "intention" represents an unobservable hypothetical state that can only be inferred from a person's overt behavior. Consequently, both an observer's inference about intent and an individual's self-report of past intent are subject to bias and inaccuracy. In an attempt to avoid some of the problems inherent in inferring intent in driving behavior, this study focused on developing a scale that describes driving behavior without reference to possible emotional states (i.e., irritation, frustration, anger, and rage) or motivational states (i.e., boredom, competition, punishment, and revenge). Given the broad range of cognitive, emotional, and motivational states identified in theories of human aggression (e.g., Anderson, Deuser, & DeNeve, 1995), it appears more parsimonious to assess specific behaviors than to attempt to pair behaviors with cognitions, emotions, or motivations.

There are a number of constructs that should converge on any valid measure of aggressive driving, including hostility, hypercompetitivness, and aggressive thoughts while driving (Blanchard, Barton, & Malta, 2000; Houston, McIntire, Hunter, Johnson, & Francis, 2001). Hostility is characterized by a tendency to distrust and dislike others (Cook & Medley, 1954). These propensities towards distrustfulness run counter to the prescriptive rules of driving that emphasize courteous social behavior and respect for the rights of others. When other drivers become the target of this distrust and disliking, the resulting pattern of driving behavior may appear hostile and aggressive. Accordingly, those high in hostility would be expected to engage in more behaviors associated with aggressive driving.

Hypercompetitiveness is defined as "an indiscriminant need to compete and win (and avoid losing) at any cost as a means of maintaining or enhancing feelings of self worth" (Ryckman, Hammer, Kaczor. & Gold. 1990. p. 632). Since driving is based on cooperative principles of social interaction. engaging in competitive behavior while driving can lead to a pattern of driving that is perceived as aggressive. Thus. drivers high in hypercompetitiveness should display a higher frequency of aggressive driving behavior.

Finally, aggressive driving should be associated with aggressive thoughts and emotions experienced while driving. Several researchers (Stokols. Novaco. Stokols. & Campbell. 1978; Glendon. Dorn. Matthews. Gulian. Davies. & Debney. 1993) argue that aggressive driving represents a stress-related response to driving environments. This definition of aggressive driving proposes that as drivers experience various types of stress-provoking situations. they utilize coping strategies that may include confrontational responses such as aggressive thoughts. anger. and risk-taking behavior. Although the nature of the driving stressors vary across drivers. aggressive driving is often a byproduct of coping strategies that involve characteristic patterns of cognitive. emotional. and behavioral responses to the driving environment. Therefore. drivers with stress-related aggressive thoughts and emotions should engage in a higher frequency of aggressive driving behaviors.

To summarize. the purpose of this study was to develop a scale of aggressive driving behavior and examine the scale's convergent validity with measures of hostility, hypercompetitiveness. and aggressive driving-related thoughts and emotions. Consequently. if the Aggressive Driving Behavior Scale is a valid measure of aggressive driving, it should be positively correlated with measures of hostility. hypercompetitiveness. and aggressive driving-related thoughts and emotion.

## METHOD

### Participants

Two hundred undergraduate students (111 women and 89 men) at a small liberal arts college located in the greater Orlando area agreed to participate. Participants ranged in age from 18 to 24 years. with a mean age of 20.02 (*SD* = 1.41). Mean length of driving experience was 4.24 years (*SD* = 1.76). with 36% of participants reporting that most of their experience was with highway driving and the remaining 64% reporting the most experience with city driving.

### Measures

The Aggressive Driving Behavior Scale lists 11 unsafe driving practices that could be interpreted as aggressive (see Table 1). Initial items were generated following a series of peer focus groups in which undergraduate students discussed their own driving behaviors and those of others. During the focus groups. student facilitators recorded a total of

11 behaviors that group members most strongly believed represented aggressive driving. Using the resulting measure, participants rate the frequency with which they have engaged in each of the 11 behaviors over the past six months using a 6-point response scale (1 never, 2 almost never, 3 sometimes, 4 fairly often, 5 very often, 6 always).

In order to validate the scale, a number of measures conceptually linked to aggressive driving were administered.

TABLE 1 Rotated Factor Loadings and Scale Statistics for the Aggressive Driving Behavior Scale

| | Factor Loadings | |
|---|---|---|
| Items by Factor | One | Two |
| **Conflict Behavior (α = .73)** | | |
| Intentionally tap my brakes when another car follows too closely | .74 | -.25 |
| Make rude gestures at other drivers when they do something I don't like | .62 | .31 |
| Honk when another driver does something inappropriate | .58 | .19 |
| Merge into traffic even when another driver tries to close the gap between cars | .58 | .19 |
| Speed up when another car tries to overtake me | .56 | .25 |
| Follow another car in front of me closely to prevent another car from merging in front of me | .53 | .37 |
| Flash my high beams at slower traffic so that it will get out of my way | .46 | .24 |
| **Speeding (α = .68)** | | |
| Follow a slower car at less than a car length | .02 | .72 |
| Drive 20 miles per hour faster than the posted speed limit | .21 | .72 |
| Pass in front of a car at less than a car length | .30 | .68 |
| Accelerate into an intersection when the traffic light is changing from yellow to red | .42 | .48 |

*Note*. For all 11 items: α = .80

*The Driving Aggression Scale of the Driving Behaviour Inventory.* All participants completed the *Driving Aggression Scale* of the *Driving Behavior Inventory* (Glendon et al., 1993). The *Driving Aggression Scale* (DAS) is a 9-item measure designed to assess aggressive thoughts, emotions, and motivational states experienced while driving. Each item on the DAS uses a 100-mm visual analogue scale and is scored 0-100. Participants respond to scale items by placing a mark along a 100-mm line with scale anchors of "Not at all" at one end and "Very much" at the other. The distance of the mark in mm from the "Not at all" anchor determines the score on the item. The scale score is computed by averaging the scores from the individual items. Examples of scale items include "Driving usually makes me feel aggressive" and "I think it is worthwhile to take risks on the road." The DAS has a test-retest reliability of .72 and a Cronbach's alpha of .79. Mathews (1993) reports that the DAS is positively correlated with driving behaviors such as tailgating and frequent overtaking.

*The Hypercompetitiveness Attitude Scale.* Participants also completed the Hypercompetitiveness Attitude Scale (HCA) developed by Ryckman, Hammer, Kaczor, and Gold (1990) to measure a high need to compete and win at all costs. The 26-item HCA uses a 5-point response scale ranging from 1 (never true of me) to 5 (always true of me). Sample items include "If you don't get the better of others, they will surely get the better of you," and "Failure or loss in competition makes me feel less worthy as a person." The scale has high internal consistency ($\alpha = .91$) and is positively correlated with several other measures of competitiveness (Houston, McIntire, Kinnie, and Terry, 2002).

*The Cook Medley Hostility Scale.* A subsample of 116 participants also completed the Cook Medley Hostility (Ho) Scale (Cook & Medley, 1954), 50 items extracted from the MMPI that measure a relatively stable and enduring hostile attitude towards the world. The Ho scale uses a true-false response format and includes items such as "I think most people would lie to get ahead" and "It is safer to trust nobody." The scale has high test-retest reliability ($r$=.84 over 4 years; Shekelle, Gale, Ostfeld, & Paul, 1983) and high internal consistency ($\alpha = .82$; Smith & Frohm, 1985). The scale is also positively correlated with behavioral and self-report measures of hostility (Smith, Sanders, & Alexander, 1990).

## RESULTS

### Scale Development

A principal component analysis with varimax rotation of the 11 aggressive driving behavior items yielded two factors with eigenvalues greater than 1. This two-factor solution accounted for 44.82% of the explained variance.

Table 1 illustrates the rotate factor matrix as well as the reliabilities (Cronbach's alpha) for the items composing each factor. Items from the first factor were combined to form the Conflict Behavior Scale ($\alpha = .73$). These questions clearly represent aggressive behaviors directed towards other drivers. Items from the second factor were combined to form the Speeding Scale ($\alpha = .68$). These questions describe behaviors of drivers who typically drive at higher speeds. These behaviors could still be considered as aggressive since the drivers are putting others at risk as the result of their own reckless behavior. The two subscales were significantly correlated, $r = .54$, $p < .01$. Combining all 11 items from the two subscales of the Aggressive Driving Behavior Scale results in a reliable ($\alpha = .80$) overall measure of aggressive driving practices.

On average, participants reported using Speeding Scale behaviors ($M = 3.45$, $SD = .95$) more frequently than Conflict Behavior Scales behaviors ($M = 2.80$, $SD = .84$), $t_{(199)} = 10.62$, $p < .01$. As Table 2 illustrates, males reported using more behaviors than females on the Aggressive Driving Behavior Scale as a whole, $t_{(198)} = 2.57$, $p < .05$. Using Cohen's effect size index (Cohen, 1988), the effect size was small to moderate ($d = .37$). Gender differences were also found on the Conflict Behavior subscale, $t_{(198)} = 3.14$, $p < .01$, $d = .45$. Gender differences for the overall scale are primarily due to Conflict Behavior responses, as no significant difference was found for scores on the Speeding Scale, $t_{(198)} = .93$, $p = .36$, $d = .13$.

TABLE 2 Means for Scales and Items, and Comparisons of Means for Females and Males

| | Overall Sample | | Means by Gender | |
|---|---|---|---|---|
| Items by Scale | *M* | *SD* | Female | Male |
| Aggressive Driving Behavior Scale | 33.40 | 8.58 | 32.02 | $35.11^{*}$ |
| Conflict Behavior Subscale | 19.61 | 5.91 | 18.46 | $21.04^{**}$ |
| Tap brakes when car follows too closely | 2.99 | 1.47 | 2.74 | $3.31^{**}$ |
| Make rude gestures | 2.41 | 1.37 | 2.23 | $2.64^{*}$ |
| Honk | 3.23 | 1.45 | 3.23 | 3.24 |
| Force merge into traffic | 2.81 | 1.21 | 2.68 | 2.98 |
| Speed up when car tries to overtake me | 2.89 | 1.36 | 2.75 | 3.08 |
| Follow car closely to prevent another merging | 3.18 | 1.34 | 3.11 | 3.28 |
| Flash my high beams at slower traffic | 2.09 | 1.34 | 1.74 | $2.52^{**}$ |
| Speeding Subscale | 13.79 | 3.79 | 13.57 | 14.07 |
| Follow slower car at less than car length | 3.44 | 1.33 | 3.56 | 3.28 |
| Drive 20 mph faster than speed limit | 3.30 | 1.35 | 3.14 | 3.51 |
| Pass in front of a car at less than a car length | 3.14 | 1.30 | 2.94 | $3.39^{*}$ |
| Accelerate through yellow light | 3.91 | 1.33 | 3.94 | 3.89 |

$^{*}p < .05$. $^{**}p < .01$.

## Scale Validation

Pearson correlation coefficients presented in Table 3 support the validity of the *Aggressive Driving Behavior Scale* and its two subscales. Reported frequency of aggressive driving behaviors was positively related to aggressive thoughts and emotions experienced while driving (*Driving Aggression Scale*: Glendon et al., 1993), high levels of competitiveness (*Hypercompetitiveness Attitude Scale*: Ryckman et al.,

1990) and a hostile orientation to life (*Cook Medley Hostility Scale*: Cook & Medley, 1954).

## DISCUSSION

Overall, the findings from this study indicate that the *Aggressive Driving Behavior Scale* (ADBS) has good psychometric properties. In addition to moderately high internal consistency for the entire 11-item scale, the measure contains two factors (Conflict Behavior and Speeding) that form internally consistent subscales. As expected, the *Aggressive Driving Behavior Scale* was also positively correlated with measures of hostility, hypercompetitiveness, and aggressive thoughts while driving. While providing evidence of convergent validity, this pattern of results also indicates that the ADBS is related to, but distinct from, the stress and anger-based conceptualization of aggressive driving provided by the *Driving Aggression Scale* which emphasizes emotional reactions to driving and negative appraisal of other drivers.

TABLE 3 Pearson Correlation Coefficients for Aggression Scales

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Aggressive Driving Behavior Scale (ADBS) | -- | | | | |
| 2. Conflict Behavior Subscale of ADBS | .93 | -- | | | |
| 3. Speeding Subscale of ADBS | .82 | .54 | -- | | |
| 4. Driving Aggression Scale | .54 | .47 | .50 | -- | |
| 5. Hypercompetitiveness Attitude Scale | .41 | .38 | .33 | .35 | -- |
| 6. Cook Medley Hostility Scale | .36 | .30 | .35 | .35 | .45 |

*Note*. All correlations are significant, $p < .01$.

By focusing on the behavioral aspects of aggressive driving, the ADBS provides a useful distinction between two dimensions of risky driving behavior, conflict behavior and speeding. Conflict behavior involves direct social interaction with other drivers and is characterized by incompatible actions that elicit conflict responses, such as honking, rude gesturing, and flashing high beams. The cluster of behaviors in the *Conflict Behavior Scale* is consistent with other forms of interpersonal conflict behavior in that goals appear to be impeded or blocked by others.

Several researchers have suggested that attributional processes serve as precursors of conflict behavior. For example, Myers (2002) reports that the perceived incompatibility of actions is often magnified by misperceptions. Within the context of driving, this suggests that attributions can influence aggressive driving behavior. This conceptualization of aggressive driving implies that attributional processes as well as stress and anger should be considered in future research exploring the dynamics of aggressive driving.

The behaviors forming the *Speeding Scale* appear to differ from *Conflict Behavior Scale* items by their focus on unsafe driving practices that do not necessarily involve other drivers. Although the *Speeding Scale* includes risk-taking behavior, such as speeding, tailgating, and failing to slow for yellow lights, it is unclear if these behaviors represent calculated risks, impulsive decision-making or simply carelessness. Future research using convergent and differential validity strategies should provide greater conceptual clarity of the dimension of aggressive driving assessed by this scale.

Gender differences on the ADBS, particularly the *Conflict Behavior Scale*, warrant further research. Although the effect sizes are small to moderate, these findings indicate that men overtly express their aggression differently than women while driving. These results are consistent with findings from Bettencourt and Miller's (1996) meta-analysis on gender differences in aggression which found that in experimental studies unprovoked men are more aggressive than women. Although aggression researchers continue to debate the extent to which biological factors, cultural norms, and gender roles contribution to gender differences in aggression (e.g. Benton, 1992), meta analyses by Eagly and Steffen (1986) and Bettencourt and Miller (1996) suggest that: (1) men tend to be more aggressive than women, unless situational factors make gender role consideration less salient, and (2) women differ from men in their assessment of the degree to which a situation might evoke a dangerous retaliation. Applied to the driving context, these findings may help account for the gender differences on the Conflict Behavior Scale of the ADBS and the lack of gender differences on the Driving Aggression Scale (DAS).

Consistent with previous research (Mathews, Dorm, Hoyes, Davies, Glendon, & Taylor, 1998) supplemental analyses indicated no differences for the DAS, $t_{(198)} = 1.21$, $p = .23$, $d = .17$. Since the DAS primarily assesses aggressive thoughts and emotions while driving, these findings indicate that there may be no real differences in the affective and cognitive responses of male and female drivers. However, the Conflict Behavior Scale of the ADBS involves direct interaction with other drivers and contains several items which could evoke a dangerous retaliation, such as "make rude gestures", "flash my high beams at slower traffic", and "tap my brakes when a car follows too closely." Thus, in keeping with Berkowitz's (1988) findings that those who have reason to fear that their aggressive acts will bring about retaliation are more likely to control their aggression, women may experience similar aggressive thoughts and emotions as men while driving but may refrain from certain types of aggressive driving behaviors to avoid danger from retaliation. However, more research is needed to determine the factors contributing to gender differences in aggressive driving.

The *Aggressive Driving Behavior Scale* is designed to have practical utility as both a research tool and a self-assessment instrument. By measuring specific and observable driving behaviors, the ADBS can be compared directly with objective driving data as well as observer ratings. This should reduce potential bias associated with attempting to infer drivers'cognitive, emotional, and motivational states. As a self-assessment instrument, the ADBS can be used by drivers to identify their own unsafe driving practices and target specific behaviors that need to change to reduce aggressive driving. Since the measure is easy to administer, score, and interpret, the ADBS may be appropriate as a diagnostic tool in educational settings such as driver education classes or traffic school. Although the ADBS does not attempt to provide a comprehensive list of unsafe driving practices, it focuses on behaviors that are most commonly associated with aggressive driving.

Finally, given that aggressive behavior is influenced by individual, social, cultural, and environmental factors (Anderson, Deuser, & DeNeve, 1995), further research is needed to investigate how these variables relate to the ADBS. For example, under what circumstances are people more likely to engage in specific types of aggressive driving? To what extent do cultural norms influence aggressive driving? Examining a broader range of correlates of the ADBS should provide a more complete theoretical framework for studying aggressive driving behavior.

## REFERENCES

Anderson, C. A., Deuser, S. B., & DeNeve, K. M. (1995). Hot tempers, hostile affect, hostile cognition and arousal: tests of a general model of affective aggression. *Personality and Social Psychology Bulletin, 21*, 434-448.

Benton, D. (1992). Hormones and human aggression. In K. Bjorkqvist & P. Niemela (Eds.), *Of mice and women: Aspects of female aggression* (pp. 37-46). San Diego, CA: Academic Press.

Berkowitz, L. (1988). Frustration, appraisals, and aversively stimulated aggression. *Aggressive Behavior, 106*, 59-73.

Bettencourt, B. A., & Miller, N. (1996). Gender differences in aggression as a function of provocation: A meta-analysis. *Psychological Bulletin, 119*, 422-447.

Blanchard, E. B., Barton, K. A., & Malta, L. (2000). Psychometric properties of a measure of aggressive driving: the Larson Driver's Stress Profile. *Psychological Reports, 87*, 881-892.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences ($2^{nd}$ ed.). Hillsdale, NJ: Erlbaum.

Cook, W., & Medley, D. (1954). Proposed hostility and pharisaic-virtue scales for the MMPI. *Journal of Applied Psychology, 38*, 414-418.

Deffenbacher, J. L., Oetting, E. R., & Lynch, R. S. (1994). Development of a driving anger scale. *Psychological Reports, 74*, 83-91.

Eagly, A. H. & Steffen, V. (1986). Gender and aggressive behavior: A meta-analytic review of the social psychological literature. *Psychological Bulletin, 100*, 309-330.

Feldman, R. S. (1995). *Social Psychology*. Englewood Cliffs, NJ: Prentice Hall. Pp. 260-261.

Glendon, A. I., Dorn, L., Matthews, G., Gulian, E., Davies, D. R., & Debney, L. M. (1993). Reliability of the Driving Behaviour Inventory. *Ergonomics, 36*, 719-726).

Houston, J. M., McIntire, S., Hunter, E., Johnson, K., & Francis, D. (2001). *Hypercompetitiveness and aggressive driving: getting my way on the highway*. Poster presented at the 47th Annual Meeting of the Southeastern Psychological Association, Atlanta, Georgia.

Houston, J. M., McIntire, S. A., Kinnie, J., & Terry, C. (2002). A factor analysis of scales measuring competitiveness. *Educational and Psychological Measurement, 62*, 284-298.

Larson, J. A. (1996). *Steering clear of highway madness: a driver's guide to curbing stress and strain*. Wilsonville, OR: Bookpartners. Pp. 25-28.

Mathews, G. (1993). Cognitive processes in driver stress. *In Proceedings of the 1993 International Conference of Health Psychology* (pp. 90-95). Tokyo: International Congress of Health Psychology.

Mathews, G., Dorm, L., Hoyes, T. W., Davies, D. R., Glendon, A. I., & Taylor, R. G. (1998). Driver stress and performance on a driving simulator. *Human Factors, 40*, 136-149.

Myers, D. G. (2002). *Social Psychology*. (7th ed.) New York: McGraw-Hill. Pp. 377-378.

Ryckman, R. M., Hammer, M., Kaczor, L. M., & Gold, J. A. (1990). Construction of a hypercompetitive attitude scale. *Journal of Personality Assessment, 55*, 630-639.

Shekelle, R. B., Gale, M., Ostfeld, A. M., & Paul, O. (1983). Hostllity risk of coronary heart disease, and mortality. *Psychosomatic Medicine, 45*, 109-114.

Smith, T. W., & Frohm, K. D. (1985). What's so unhealthy about hostility? Construct validity and psychosocial correlates of the Cook and Medley Ho scale. *Health Psychology, 4*, 503-520.

Smith, T. W., Sanders, J. D., & Alexander, J. F. (1990). What does the Cook and Medley Hostility scale measure? Affect, behavior, and attributes in the marital context. *Journal of Personality and Social Psychology, 58*, 699-708.

Stokols, D., Novaco, R. W., Stokols, J., & Campbell, J. (1978). Traffic congestion, type A behavior, and stress. *Journal of Applied Psychology, 63*, 467-480.

U.S. Department of Transportation National Highway Traffic Administration. *Traffic Safety Facts 2000 Speeding*. Retrieved August, 2002, from http://www-fars.nhtsa.dot.gov/pubs/12.pdf.

Wiesenthal, D. L., Hennessy, D., & Gibson, P. M. (2000). The *Driving Vengeance Questionnaire* (DVQ): the development of a scale to measure drivers' attitudes. *Violence and Victims, 15*, 115-36.

# Psychological Needs and Response Bias: An Examination of Paulhus and John's Reformulation

Bryce F. Sullivan
*Southern Illinois University Edwardsville*

Donald J. Scandell
*Southern Illinois University Edwardsville*
&
*University of Missouri School of Medicine*
*Missouri Institute of Mental Health*

The purpose of this study was to examine the relationship between social desirability bias and psychological needs. Paulhus and John (1998) hypothesized that Moralistic and Egoistic bias are related to the needs for Approval and Power and to the values of Communion and Agency respectively. Students ($N$ = 160) completed the *Balance Inventory of Desirable Responding* and the *Personality Research Form-E*. Hierarchical multiple regression analyses suggested that Moralistic bias was significantly predicted by Impulse Control (low Impulsivity and high need for Order), Interpersonal Orientation (denial of needs for Social Recognition, Aggression, and Defendence), and Orientation to Work and Play (high Achievement, high Endurance and low Play). Egoistic bias was significantly predicted by Orientation to Work and Play (high Achievement and Endurance), and degree of Ascendancy (high Dominance and low Abasement).

In his original formulation, Paulhus (1984) suggested that social desirability is comprised of two components: Impression Management (IM) and Self-Deception (SD). In Impression Management, individuals deliberately attempt to manipulate their responses to create specific impressions. In Self-Deception, which is thought to be an unconscious process (Hoorens, 1995), individuals believe that they have overly positive traits which they in fact do not possess. Paulhus considered Impression Management to be a greater threat to test validity than Self-Deception (Paulhus, 1986, 1991). Self-Deception was posited to be a reflection of personality while Impression Management was a function of environmental contingencies to self-present in a particular manner

---

*Author info:* Correspondence should be sent to: Bryce F. Sullivan, Southern Illinois University Edwardsville, Campus Box 1121, Edwardsville, IL, 62026. E-mail: bsulliv@siue.edu

*North American Journal of Psychology*, Vol. 5, No. 2, 279-288.

© NAJP

(Lindeman & Verkasalo, 1995). In this original formulation, Paulhus considered the individual's target audience as the critical variable for determining the socially desirable response bias: in Self-Deception the audience is the self; while in Impression Management the audience is other people.

Recently, Paulhus and John (1998) have reformulated their conceptualization of social desirability. They now propose that social desirability can be better understood in terms of Egoistic and Moralistic bias. Individuals high in Egoistic bias score high on the Self-Deceptive Enhancement scale of the *Balanced Inventory of Desirable Responding* (BIDR; Paulhus, 1986), while Moralistic bias is related to Impression Management scores. In Egoistic bias, Paulhus and John (1998) suggest that individuals exaggerate interpersonal status and intellectual abilities by endorsing positive trait descriptions. They self-present as being strong, capable, intellectually superior, and dominant. Individuals high in Egoistic bias tend to exaggerate intellectual and social status. They claim to possess "superhero" like qualities. In Moralistic bias, related to the need for Approval, individuals deny having negative traits. These individuals exaggerate qualities related to Communion and getting along with others, deny socially deviant behaviors, and self-present as dutiful, moral, and restrained. Rather than trying to create a favorable impression by self-reporting outstanding accomplishments as do their Egoistic counterparts, individuals high in Moralistic bias attempt to increase self-worth by avoiding disapproval through social conformity. Rather than seeing themselves as great people, they see themselves as good people, having "saint-like" qualities.

Both Egoistic and Moralistic bias involve the tendency to present oneself in a favorable light. The difference between the two involves the content of the self-presentation. In Egoistic bias, individuals attempt to look good by exaggerating their competencies, abilities, status, and achievements. In Moralistic bias, individuals attempt to look good by conforming to the rules, fitting in, and not engaging in deviant behavior.

In their review of the literature, Paulhus and John (1998) suggested that there is an association between response bias and personality (Paulhus, 1998; Meston, Heinman, Trapnell & Paulhus, 1998). Specifically, they document evidence suggesting that Egoistic bias is associated with the traits of Dominance, Extraversion, Openness to Experience, and Emotional Stability. According to Paulhus and John, the primary value related to Egoistic bias is Agency, and the motivational system revolves around the need for Power. Alternatively, Moralistic bias has been related to the traits of Agreeableness, Conscientiousness, Dutifulness, and Restraint. Rather than exaggerating their abilities, individuals high in Moralistic bias tend to deny socially deviant attitudes, behaviors, and impulses. Paulhus and John suggest that the primary value related to Moralistic bias is Communion or getting along with others. The motives related to Moralistic bias involve the need for Approval. From this perspective, Egoistic and Moralistic bias represent more than tendencies to respond to questionnaires; rather, they are basic orientations to the self and the interpersonal world. Moreover, Paulhus and John (1998) proposed that there is an inexorable path from values to biases.

Paulhus and John (1998) hypothesized that the Egoistic bias and Moralistic bias are two constellations of values, motives, and biases. The purpose of this study was to examine the hypothesized relationships between values, motives, and response biases. First, we examined Paulhus and John's hypothesis suggesting that the value Agency and the need for Power are related to Egoistic bias. Second, we examined their hypothesis that the value Communion and the need for Approval are related to Moralistic bias. Examining the relationships between these variables may increase our understanding of response biases as self-deceptive mechanisms. Moreover, showing relationships between psychological needs and response biases would provide support for Paulhus and John's assertions concerning basic personality functioning.

## METHOD

### Participants

All participants were drawn from the undergraduate psychology subject pool at a moderate-sized Midwestern university. Participants were 160 male (78) and female (82) college students who completed the study for course credit in an Introductory Psychology course. The mean age of participants was 21.1 years (*SD* = 5.4) with 83.8% of the sample under 22 years of age and 95% under 30. In terms of cultural background, most of the sample was white (83.8%), 12.5% were African American, .6% were Latino, and .6% were Oriental.

### Measures and Procedures

The following questionnaires, along with a demographic instrument, were group-administered and most participants completed them within 90 minutes.

The *Balanced Inventory of Desirable Responding-6* (BIDR-6; Paulhus, 1998) is a 40-item measure of Paulhus's two factor theory of social desirability. Paulhus has suggested that social desirability has two aspects: Self-Deceptive Enhancement (SDE; or Egoistic bias) and Impression Management (IM; or Moralistic bias). Paulhus (1991) reported a test-retest reliability of .69 for SDE and one of .65 for IM. Alpha levels reported for SDE have ranged from .68 to .80; while alpha levels for IM have ranged from .75 to .86 (Paulhus, 1991).

The *Personality Research Form - Form E* (PRF: Jackson, 1999) is based upon Murray's (1938) theory of personality and focuses on areas of normal functioning rather than psychopathology. The PRF is widely used to measure psychological needs based on Murray's (1938) need theory. The inventory is composed of 352 items in a true-false response format. The following scales can be scored on the PRF: Achievement, Affiliation, Aggression, Autonomy, Change, Cognitive Structure, Defendence, Dominance, Endurance, Exhibition, Harm-Avoidance, Impulsivity, Nurturance, Order, Play, Sentience, Social Recognition, Succorance, Understanding, Infrequency, and Desirability.

The PRF has been found to be related to the Five-Factor Model (Ashton et al., 1998, Costa & McCrae, 1988), attachment styles (Randolph, Smart, & Nelson, 1997), and the Interpersonal circumplex (Wiggins & Broughton, 1985).

According to Jackson (1999), factor analytic findings suggest that the 22 PRF scales can be grouped into seven superordinate categories. Impulse Control and Expression (Impulsivity + Change - [Harmavoidance + Order + Cognitive Structure]); Orientation towards Work and Play (Achievement + Endurance - Play); Orientation towards Direction from Other People (Succorance - Autonomy); Intellectual and Aesthetic Orientations (Understanding + Sentience); Degree of Ascendancy (Dominance - Abasement), Degree and Quality of Interpersonal Orientation (Affiliation + Nurturance + Exhibition + Social Recognition - [Aggression + Defendence]); and Test-Taking Attitudes and Validity (Desirability + Infrequency). Adequate levels of reliability (split-half, homogeneity) and validity (convergent, discriminant, construct) are documented in the PRF manual (Jackson, 1999).

Due to the number of scales that could potentially be used as predictors, the 20 PRF scales were reorganized into the superordinate categories outlined by Jackson (1999) with the exception of the Test-Taking Attitudes and Validity category. The use of 20 predictors, given a moderate effect size and an alpha of .05, would require a sample size larger than currently at hand. In such a situation, Cohen (1992) suggested the use of superordinate categories to summarize and condense the number of predictor variables. The PRF superordinate categories were used as predictors, and the BIDR scores for Moralistic bias and Egoistic bias were the criterion variables. The superordinate PRF categories include the following: Impulse Expression and Control, Orientation towards Work and Play, Orientation towards Direction from other People, Intellectual and Aesthetic Orientation, Degree of Ascendancy, Degree and Quality of Interpersonal Orientation. Zero-order correlations were then examined to determine which components of the superordinate categories were driving the relationships. Based upon a review of the PRF manual, it was predicted that Moralistic bias would be related to measures of Impulse Expression and Control and that Egositic bias would be related to Ascendancy.

## RESULTS

The plan of this study was to explore the relationships between values and motives as measured by the *Personality Research Form* (PRF) and Moralistic and Egoistic bias as measured by the BIDR scores using multiple regression analyses.

TABLE 1 Zero-order correlations between *Balanced Inventory of Desirable Responding* and *Personality Research Form E* Scores

| | Egoistic bias (SDE) | Moralistic bias(IM) |
|---|---|---|
| Abasement | -.21** | .03 |
| Achievement | .28*** | .29*** |
| Affiliation | .05 | .00 |
| Aggression | -.14 | -.39*** |
| Autonomy | .03 | -.05 |
| Change | .11 | -.02 |
| Cognitive Structure | .06 | .15 |
| Defendence | -.18* | -.25*** |
| Dominance | .21** | .06 |
| Endurance | .34*** | .23** |
| Exhibition | .08 | -.10 |
| Harm Avoidance | .00 | .05 |
| Impulsivity | -.21** | -.31*** |
| Nurturance | -.11 | .06 |
| Order | .20* | .38*** |
| Play | -.05 | -.20* |
| Sentience | -.09 | .00 |
| Social Recognition | -.24** | -.18* |
| Succorance | -.10 | -.07 |
| Understanding | .10 | .09 |
| Infrequency | -.06 | -.08 |
| Desirability | .40*** | .41*** |

*Note*: $N = 160$. $*p<.05$. $**p<.01$. Self Deceptive Enhancement (SDE), Impression Management (IM).

Inter-item homogeneity for Egoistic bias was .66 and .71 for Moralistic bias. These levels are consistent with those reported elsewhere (Paulhus, 1991). The correlation between Moralistic and Egoistic bias was significant ($r = .41$, $p < .001$) and higher than the levels found in other studies (Paulhus, 1991).

The high Egoistic-Moralistic correlation was statistically controlled through the use of a forced entry procedure in the multiple regression analyses. Two hierarchical multiple regression analyses were used to examine the relationship between BIDR and PRF scores. Moralistic and Egoistic bias scores served as the criterion variables. In step 1 of the forced entry procedure, the BIDR scale that was not used as the criterion was employed as the first predictor. This removed the variance associated with the high intercorrelation between Egoistic and Moralistic bias. In step 2 for each hierarchical analysis, the 6 PRF superordinate category scores were entered.

Egoistic bias was significantly predicted by PRF superordinate categories Orientation to Work and Play (beta = .302, $p = .001$) and Ascendancy (beta = .22, $p = .004$). Moralistic bias was significantly predicted by Orientation to Work and Play (beta = .310, $p = .001$), Impulse Control (beta = -.189, $p = .016$), and Interpersonal Orientation (beta = .161, $p = .032$).

Table 1 provides the zero-order correlations between BIDR scores and the 20 scales of the PRF. Egoistic bias was found to be significantly correlated with the following needs: Abasement, Achievement, Defendence, Dominance, Endurance, Impulsivity, Order, and Social Recognition. Moralistic bias was found to be significantly correlated to Achievement, Aggression, Defendence, Endurance, Impulsivity, Order, Play, and Social Recognition.

## DISCUSSION

The purpose of this study was to examine the relationships between values, motives, and response biases. The value Agency and the motive need for Power were expected to relate to Egoistic bias. The value Communion and the motive need for Approval were expected to relate to Moralistic bias. The results of this study are both consistent with and extend Paulhus and John's (1998) reformulation of Egoistic and Moralistic bias. Multiple regression analysis revealed that Egoistic bias was significantly predicted by the PRF superordinate indices of Orientation to Work and Play and to Degree of Ascendancy. Orientation towards Work and Play is composed of three PRF scales: Achievement, Endurance, and Play. The zero-order correlations were used to examine which of these components were driving the significant relationship between the superordinate category and bias. Achievement and Endurance but not Play was found to be significantly correlated to Egoistic bias. This suggests that individuals high in Egoistic bias self-report having high standards, being competitive, hard working, and persistent.

Multiple regression analyses also revealed that Egoistic bias was related to the superordinate index of Degree of Ascendancy. Ascendency is composed of two scales: Dominance and Abasement. Dominance was significantly and positively correlated and Abasement was significantly and negatively correlated to Egoistic bias. This suggests that individuals high in Egoistic bias attempt to control the environment and other people, express their opinions forcefully, are self-promoting, and self-present as self-assured and proud.

Multiple regression analysis demonstrated that Moralistic bias was related to the superordinate index of Orientation to Work and Play. Zero-order correlations reveal that Achievement, Endurance and Play were all related to Moralistic bias. Achievement and Endurance were positively related to Moralistic bias, and Play was negatively related to Moralistic bias. This suggests that individuals high in Moralistic bias are hard-working, persistent individuals who wish to be perceived as serious-minded.

Multiple regression analysis also showed that Moralistic bias was related to Impulse Control. Zero-order correlations suggest that Impulsivity and need for Order are driving the relationship between Impulse Control and Moralistic bias. Individuals high in impulse control tend to be reserved self-controlled and deliberate. High need for Order is related to being neat, organized, and methodical.

Multiple regression analyses revealed that Moralistic bias was also related to the PRF superordinate index Degree and Quality of Interpersonal Orientation. This relationship appears to be driven by its significant negative correlations with Social Recognition, Aggression, and Defendence. Low levels of the need for Social Recognition suggest that individuals high in Moralistic bias do not need to be held in high esteem by others. The low levels of need for Aggression and Defendence suggest that these individuals avoid confrontation and conflict, do not express anger, and do not perceive a need to defend themselves. This finding was somewhat unexpected. It appears that part of "getting along," as opposed to "getting ahead," is related to a lack of aggression and a need to circumvent conflict.

Orientation to Work was found to be related to both Egoistic and Moralistic bias. This result was not due to the .41 correlation between Egoistic and Moralistic bias, as the shared variance was controlled through the use of the forced entry procedure in the multiple regression analyses. The zero order correlations are consistent with this result and suggest that Achievement and Endurance are related to both forms of bias. However, need for Play appears to be differentially related to Egoistic and Moralistic bias. Play was not found to be related to Egoistic bias. However, higher levels of Play were significantly related to lower levels of Moralistic bias. Although not specifically hypothesized, this result makes intuitive sense. People high in Moralistic bias want to present themselves as serious, sober individuals, and as not as pleasure-seeking, playful or frivolous.

In summary, individuals high in Moralistic bias try to create a favorable self-image by inhibiting aggressive impulses, being orderly, and working persistently towards goals. They do not need social recognition for outstanding accomplishments, but rather, would like to be recognized as serious and sober. They "get along" by avoiding conflict. This desire to avoid interpersonal conflict and low aggressiveness was not specifically hypothesized by the Paulhus and John (1998) reformulation, but is clearly consistent with it. Moreover, this need to "get along" may moderate the expression of the need to Achieve of individuals high in Moralistic bias. Individuals high in Egoistic bias, on the other hand, attempt to create a favorable image by working hard towards goals and by presenting themselves as confident and self-assured. Future research may seek to examine the relationship between Moralistic and Egoistic styles and real-life behaviors and interpersonal interactions.

## REFERENCES

Ashton, M. C., Jackson, D. N., Helmes, E., Paunonen, S. V. (1998). Joint factor analysis of the *Personality Research Form* and the *Jackson Personality Inventory*: comparisons with the big five. *Journal of Research in Personality, 32,* 243-250.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Costa, P. T., Jr., & McCrae, R. R. (1988). From catalog to classification: Murray's needs and the five-factor model. *Journal of Personality and Social Psychology, 55,* 258-265.

Hoorens, V. (1995). Self-favoring biases, self-presentation, and the self-other asymmetry in social comparison. *Journal of Personality, 63,* 793-818.

Jackson, D. N. (1999). *Personality Research Form manual* (3rd ed.). Port Huron, MI: Sigma Assessment Systems.

Lindeman, M., Verkasalo, M. (1995). Personality, situation, and positiveegative asymmetry in socially desirable responding. *European Journal of Personality, 9,* 125-134.

Meston, C. M., Heiman, J. R., Trapnell, P. D., & Paulhus, D. L. (1998). Social desirable responding and sexuality self-reports. *Journal of Sex Research, 35,* 148-157.

Murray, H. A. (1938). *Explorations in personality.* New York: Oxford University Press.

Paulhus, D. L. (1984). Two-Component models of social desirable responding. *Journal of Personality and Social Psychology, 46,* 598-609.

Paulhus, D. L. (1986). Self-deception and impression management in test responses. In A. Angleitner & J. S. Wiggins (Eds.), *Personality assessment via questionnaire* (pp. 143-165). New York: Springer-Verlag.

Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measurement of personality and social psychological attitudes* (pp. 17-59). San Diego: Academic Press.

Paulhus, D. L. (1998). *Manual for Balanced Inventory of Desirable Responding (BIDR-6)*. Toronto: Multi-Health Systems.

Paulhus, D.L, & John, O. P. (1998). Egoistic and moralistic biases in self-presentation: The interplay of self-deceptive styles with basic traits and motives. *Journal of Personality, 66*, 1023-1060.

Paulhus, D. L., Bruce, N. M., & Trapnell, P. D. (1995). Effects of self-presentation strategies on personality profiles and their structure. *Personality and Social Psychology Bulletin, 21*, 100-108.

Randolph, D. L., Smart, T. K. B., & Nelson, W. (1997). The personality research form as a discriminator of attachment styles. *Journal of Social Behavior and Personality, 12*, 113-127.

Wiggins, J. S. & Broughton, R. (1985). The interpersonal circle: a structural model for the integration of personality research. *Perspectives in Personality, 1*, 1-47.

# The Resolution of Cognitive Conflict Arising From Career Choice Decisions Faced by Young Persons

Emil Asenov Geraskov
*National Institute of Education, Sofia*

The purpose of this study is to investigate thought processes in situations involving career choices. When participants chose between two mutually exclusive possibilities of action (thesis and antithesis) some of them resolved the conflict by selecting a third possibility (synthesis). Factor analysis revealed four ways for overcoming the conflict: full synthesis, synthesis with transference, cognitive repression, and behavioral repression. These were discussed along with limitations stemming from alternative ways of interpreting the results.

Among the first to tackle the problem of the role of conflict in human thinking and behavior in psychology was Sigmund Freud (1916) in his psychoanalytical theory. He concluded that thoughts and actions are strongly influenced by the ambivalent character of our experience. The opposition of social and biological forces, of instincts and social norms, of consciousness and unconsciousness, was, in his opinion, the basis for the ambivalence of these experiences, and this opposition served as the motivation for human behavior. He also described some of the psychological defense mechanisms for overcoming the ambivalence in the human psyche.

Festinger (1957) theorized that contradictions, or large discrepancies among attitudes, increases tension, and that this tension motivates the individual to reduce it. One can reduce tension either by modifying the original cognition or altering one's behavior. However, the experience of cognitive dissonance can be affected by culture (Huffman & Piggrem, 2003), so it is important to study cognitive conflicts in a variety of cultural settings.

Sykes and Matza (1957) used path analysis to explore relationships between church attendance, delinquent peer association, the tendency to neutralize conflicting values, and self-reported delinquent behavior. The learning of rationalization leads to the tendency to neutralize conflicting values. For example, I believe I have the right to hit somebody if I don't like him.

---

*Author info*: Correspondence should be sent to: Dr. Emil Geraskov, Drubja, bl. 113, entr. A, ap. 17, 1592 Sofia, Bulgaria. E-mail: emger12@yahoo.com.

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 289-300.
© NAJP

Mitchell and Dodder (1990) also used a path model among collegiate males and females of Mexican-American and Anglo origin. They found that their highest correlation was between neutralization and reported delinquency, $r = .55$. In other words, people that reported their delinquent behavior also had a strong tendency to neutralize the conflicting values they held about their behavior.

Previous research has led to the development of methods for studying how human beings resolve internal conflicts (Geraskov 1998b, 2000). These two studies employed two basic methods for investigating how humans resolve the mental contradictions that we occasionally are forced to confront. Two methods have been developed. The first method has three components – thesis, antithesis and synthesis, and each of them was evaluated independently by using a five-point scale for evaluation. In the second method respondents choose only one of four subscales – thesis, antithesis, synthesis and indifference. This latter method was used in the present study. The hypotheses is that respondents who have the highest score on the synthesis scale will overcome the contradiction between thesis and antithesis, while these who have highest score in thesis and antithesis will not succeed in overcoming this conflict.

## METHOD

### Participants

The participants were 509 Bulgarian students, selected from grades 7 and 8 from 33 villages throughout the country, selected randomly. However, it was a non-representative sample for the country at large. The sample consisted of 254 boys and 255 girls, ranging in age from 12 to 17, mean age =13.68, *SD*=0.73.

### Procedure and Materials

Three scales were used, each with ten items, which described a problem situation related to the choice of a profession or operation (See Appendix). Each student had to resolve the conflict in the situations by choosing one of the four possible answers that were defined as four subscales: thesis (T), antithesis (A), synthesis (S) and indifference (I). Indifference was presumably reflected in a response indicating that the student was not interested in any of the possibilities proposed. Thesis and antithesis were contradictory to each other, but it did not matter which of them was thesis or antithesis.

The first scale ("X"), focused on what motivates students in their choice of a profession. The thesis subscale (XT) focused on a professional choice that featured a high income and a high standard of living. This choice may be called egoism. The corresponding subscale of antithesis (XA) is altruism, where the student selects a profession in which she or he will be helpful to people. With the synthesis subscale (XS), the choice is determined on the basis of choosing a profession where one can perform best. The subscale of indifference (XI) reflects an attitude in which the students feel that the decision is unimportant, or they may simply be uninterested in the problem.

The second scale ("Y") is oriented toward examining some labor conditions. Its thesis (YT) reveals a work choice that values activity and versatility. The respective antithesis (YA) is work that requires little physical effort. The synthesis (YS) describes a work option requiring communication with others. The subscale of indifference is marked as "YI".

The third scale ("Z") is similar to X because it examines the approaches used by the students to solve problem situations related to choosing a profession. The thesis (ZT) represents decision-making responses that students believe are proper and then sticking to those positions, regardless of the problems it might create. The antithesis (ZA) is to take the advice of parents or adults and then use that advice in deciding how to react. The synthesis (ZS) is to discard one's choice and seek another, easier way out of the problem. The subscale of indifference is marked as "ZI". Examples of different scales are provided in the appendix. Table 1 shows the Cronbach's alpha for each of the subscales, with each exhibiting an alpha level of .60 or higher.

TABLE 1 Cronbach's Alpha for Each of the Subscales.

| Code | Alpha | Code | Alpha | Code | Alpha |
|---|---|---|---|---|---|
| XT | 0.79 | YT | 0.64 | ZT | 0.72 |
| XA | 0.74 | YA | 0.71 | ZA | 0.69 |
| XS | 0.82 | YS | 0.78 | ZS | 0.60 |
| XI | 0.67 | YI | 0.72 | ZI | 0.60 |

An external criterion was also used to check whether the results from the analysis corresponded to the real behavior of the students. To each scale was attached a brief description of the expected manner in which the student should behave in school, according to the aspect represented by the subscale. A teacher who had taught the student for a period of at least three years, assessed the subscale in which each student had the highest score and made an assessment as to whether the student's real behavior corresponded to their dominant subscale choice. An analysis of two groups of students was made. The number of respondents that demonstrated a lack of correspondence between the real behavior and measured behavior was 77 for scale X , 95 for scale Y , and 104 for scale

Z. But this external criterion was used only in overcoming the conflict by behavioral repression.

## RESULTS

Logically we should expect correlations between thesis and antithesis to have high negative values. But contrary to the prediction in calculating the Pearson correlations between the different subscales, paradox was identified. The correlation coefficients between the thesis and the antitheses approached zero, while the correlation coefficients between them and the synthesis were relatively high negative values. A formal-logical inference would be that the correlation coefficients of the contradictory statements within the subscales of thesis and antithesis must have higher negative values than those between them and the subscale of synthesis. Apparently this inconsistency is due to some factor, acting in the subjective cognitive area of the participants that "attracts" the contradictory statements, reducing and even overcoming their contrast. This means that respondents overcome the contradiction between thesis and antithesis, but how we see further only part of them succeeded to do this.

To explore the source of this paradox, the correlation for the subjects with the highest score for each of the separate subscales was calculated. This procedure was repeated for all of the subscales except indifference. Table 2 gives the correlation coefficients between the thesis and the antithesis for all the students having the highest scores in the relevant subscales.

An attraction effect is revealed for those students who had higher scores on the synthesis subscales, while for those who had higher scores on thesis and antithesis, a contrary effect is revealed. This means that the negative correlation coefficients between the thesis and the antithesis have higher values than those between T/A and the synthesis. Expectation of logical point of view was justified only for those respondents who had high scores in thesis and antithesis, while on the synthesis subscale this expectation wasn't justified. Only respondents having the highest scores on the synthesis subscale succeeded in overcoming the conflict.

For a large number of respondents, the attraction effect was a strong one. For those students whose predominant choices were XS scores, 54% demonstrated a significant correlation between the thesis and antithesis subscales ($r = .82$, $p < .001$). Similar responses were found for 60% of the YS respondents ($r = .81$, $p < .001$) and for 67% of the ZS respondents ($r = .61$, $p < .05$).

The attraction effect within the synthesis subscale was weakest in the ZS subscale. This effect is likely due to the fact that there the thesis in the

ZS subscale contradicts both antithesis and the synthesis, thus limiting the respondents' ability to engage in synthesis between contrary statements. Many students are at an age when they are motivated by desires for independence and self-confidence. Both failure to achieve a desired professional goal and interference from parents could be seen as something that could hinder their realization of these goals.

TABLE 2 Pearson Correlations Between Thesis and Antithesis in Subscales

| Highest score in: | *N* | r (XT& XA) | highest score in: | *n* | r bet. YT& YA | highest score in: | *N* | r (ZT& ZA) |
|---|---|---|---|---|---|---|---|---|
| XT | 100 | -0.57* | YT | 177 | -0.56* | ZT | 293 | -0.66* |
| XA | 186 | -0.56* | YA | 157 | -0.53* | ZA | 164 | -0.65* |
| XS | 211 | 0.27* | YS | 143 | +0.06 | ZS | 18 | -0.28 |

$^{*}p<0.001$

Why was there a contrast effect among the subjects who had high scores on the thesis and antithesis subscales, while there was an attraction effect for those with the high synthesis scores? As already stated, the contrast effect can be explained on the basis of the formal-logical contradiction between the thesis and antithesis. This is also reflected in the high negative values of the correlation coefficients. It is much more difficult to explain the attraction of the thesis and the antithesis within the synthesis subscale. Obviously, some of the students who were high on the synthesis scale were seeking to balance the contradiction between the thesis and the antithesis and reaching a synthesis between the two. This was verified by a factor analysis (rotation = Quartimax) that shows the contradiction between the thesis and the antithesis can be overcome in four different ways - full synthesis, synthesis by transference, cognitive repression and behavioral repression. In this case I also used the method of highest scores for each subscale, to separate respondents with best correspondence between subscale and respective behavior from those with least correspondence between subscale and respective behavior.

*1. Overcoming the contradiction by full synthesis.* To identify how the contradiction between thesis and antithesis was overcome within the X scale, factor analysis of the subjects having the highest scores in the subscales XT, XA and XS was conducted. Those results are reported in Table 3. That analysis revealed that the contrary statements (the thesis and the antithesis) always generated one factor for each of the three cases. Apparently the thesis and antithesis were perceived by the subjects as an integral whole. The difference lies in the fact that among those having the highest score in the thesis and antithesis, the relative factor loadings had opposite values, while with students having the highest score within the subscale of synthesis, the relative factor loadings for thesis and antithesis were positive values, which means that the contradiction between them is overcome. Besides this, in each of the three cases, the synthesis formed a separate factor that always had a positive factor value. Thus, that synthesis is perceived as something different from thesis and antithesis.

TABLE 3 Factor Analysis of Participants Having the Highest Scores on Subscales XT, XA and XS

| Highest score in XT | | | Highest score in XA | | | Highest score in XS | | |
|---|---|---|---|---|---|---|---|---|
| Code | F1 45% | F2 30% | Code | F1 44% | F2 32% | Code | F1 45% | F2 30% |
| XT | **-0.86** | -0.48 | XT | **0.87** | | XT | **0.80** | |
| XA | **0.85** | -0.37 | XA | **-0.75** | -0.65 | XA | **0.74** | |
| XI | 0.44 | | XI | 0.50 | | XS | | **0.95** |
| XS | | **0.97** | XS | | **0.99** | XI | 0.65 | 0.66 |

Bartlett Test, Sign.=0; All Loadings Greater than 0.30

The subscale XA, composed of those with the highest score in antithesis, has a negative value for its factor loadings for both thesis and synthesis. This indicates that the students with an altruistic orientation responded negatively both to the egoistic choice and to the *work-focused or compromise approach.* The subscale XI did not show any particular trends, but played an important role in forming the other factors. One possible interpretation is that the contradiction between the egoistic and altruistic orientation with some of the students is eliminated by choosing the work they can do best.

2.*Overcoming the contradiction by synthesis of transference.* The same procedure for identifying the factors was repeated for the Y scale. The results are given in Table 4. For those with high scores within YT, note the results with the X scale. The thesis and antithesis comprised one factor with opposing values, while synthesis was a separate factor. There was one difference with those subjects having the high scores on the antithesis subscale. In this case the subscale YA was opposed to both antithesis and synthesis. The antithesis is more strongly opposed to the synthesis scale and is revealed in the first factor, while the contrary effect to thesis is incorporated in the second factor.

For those students with high scores on the synthesis subscale, thesis and antithesis again loaded as one and the same factor, and the values of their factor loadings were positive, as well. The synthesis factor loaded within that same factor, but it had a negative value on its factor loading. This could be interpreted to mean that the conflict between thesis and antithesis was transferred to the synthesis variable.

3.*Overcoming the conflict by cognitive repression.* The same procedure was applied for scale Z. The results are reported in Table 5.

TABLE 4 Factor Analysis of the Participants Having the Highest Scores on the Subscales YT, YA and YS

| Highest score in YT | | | Highest score in YA | | | Highest score in YS | | |
|---|---|---|---|---|---|---|---|---|
| code | F1 | F2 | Code | F1 | F2 | code | F1 | F2 |
| | 42% | 32% | | 45% | 29% | | 49% | 27% |
| YA | **0.98** | | YS | **0.99** | | YS | **-0.93** | -0.37 |
| YT | **-0.72** | -0.51 | YA | -0.62 | **-0.62** | YT | **0.75** | |
| YS | | **0.97** | YT | | **0.99** | YA | **0.70** | |
| YI | | | YI | | | YI | | 0.99 |

Bartlett Test, Sign.=0; All Loadings Greater than 0.30

The participants with their highest score on ZT show a normal ratio between thesis and antithesis. Again, they are in one factor and are opposed. The synthesis subscale is in the second factor and has a positive value. For those with their highest score in ZA, the thesis and antithesis are also opposed and they are in one and the same factor.

TABLE 5 Factor Analysis of the Participants Having the Highest Scores on the Subscales ZT, ZA and ZS

| Highest score in ZT | | | Highest score in ZA | | | Highest score in ZS | | |
|---|---|---|---|---|---|---|---|---|
| Code | F1 | F2 | Code | F1 | F2 | Code | F1 | F2 |
| | 48% | 28% | | 48% | 31% | | 44% | 30% |
| ZA | **.94** | | ZS | **.84** | | ZA | **.98** | |
| ZT | **-.80** | -.59 | ZI | .69 | | ZS | -.75 | **-.48** |
| ZS | | **.77** | ZT | | **.98** | ZT | | **.99** |
| ZI | | .67 | ZA | -.61 | **-.79** | ZI | | |

Bartlett Test, Sign.=0; All Loadings Greater than 0.30

An interesting result is revealed for those subjects with the high scores in ZS. For the first time in this study, the thesis and the antithesis were in different factors, the antithesis in the first, with the thesis in the second. This phenomenon might be interpreted as repression, since the real contradiction between the thesis and the antithesis is repressed and they are no longer considered as contrary. Besides being in different factors, they are also indifferent to one another, as the subjects do not see any linkage between them. Instead, the thesis and the antithesis separately enter into contradiction with the synthesis subscale. The synthesis subscale may be repressing the thesis and the antithesis into two different factors, thus suppressing the very contradiction between them.

This suggests that the synthesis between the thesis and the antithesis was not successful. Within the Z scale, the thesis to some extent contradicts both the antithesis and the synthesis; the repression trend can also be identified with those students having the high scores in subscale ZA. However, this time the repressed subscales were ZS and ZT.

4.*Overcoming the conflict by behavioral repression.* For the group in which there was congruence between real behavior and the results from the survey, as assessed by teachers familiar with the students, there were stronger correlation coefficients, as compared to respondents from the overall sample. However, significant differences were observed within the group that showed a lack of such correspondence between real behavior and results from the survey. Table 6 shows the correlation between the thesis and the antithesis for those students.

With those students having their highest scores in the thesis and antithesis categories, lower negative values of the correlation coefficients in comparison to Table 2 are observed.

TABLE 6 Pearson Correlations Between Thesis and Antithesis for Those With Lack of Correspondence Between Real Behavior and Survey Results

| Highest score in: | N | r bet. XT& XA | Highest score in: | n | r bet. YT& YA | Highest score in: | N | r bet. ZT& ZA |
|---|---|---|---|---|---|---|---|---|
| XT | 16 | -.35 | YT | 39 | -.49** | ZT | 74 | -.65*** |
| XA | 22 | -.51* | YA | 36 | -.34* | ZA | 23 | -.55** |
| XS | 39 | -.20 | YS | 20 | -.04 | ZS | 7 | .12 |

*$p<0.05$; **$p<0.01$; ***$p<0.001$

Much more interesting is the result obtained from participants having the highest score within the synthesis subscales, where the correlation coefficients bear just the opposite sign compared to those in Table 2. They become negative in the X and Y scales, while there is a positive value of the coefficient for scale Z. All these correlations become even bigger if we make a comparison only with the group of participants characterized by a compliance between the results from the inventory and real behavior.

The trends of difference between overall sample and the group that showed a lack of such correspondence between real behavior and results from the survey are also reflected in the factor analysis. Table 7 presents the results of the factor analysis for all students whose real behavior was discrepant from survey results, and who had their highest scores in the subscales YA, XA and XS. In the analysis of the results for the students having their highest scores in XA it is seen that these results differ from those which we have for them in Table 3. In the first factor the subscales of the synthesis and the antithesis are opposed, while the thesis is found in the second factor. The same result is obtained for the subscales XT and YT, the opposition within them being between the subscales of synthesis and thesis. For the students having their highest scores in XS of Table 7 we have results that imply repression, while in Table 3 the conflict is overcome through a full synthesis. We also have results that suggest the presence of repression among the students whose highest scores were in the YS, which also differs from that revealed in Table 4. For the students having highest scores within the ZS subscale, we have the suggestion of synthesis through transference, while the typical result in Table 5 is consistent with repression.

TABLE 7 Factor Analysis of the Participants Who Showed a Lack of Correspondence Between Real Behavior and Survey Results

| Highest score in YA | | | Highest score in XA | | | Highest score in XS | | |
|---|---|---|---|---|---|---|---|---|
| Code | F1 42% | F2 32% | code | F1 46% | F2 27% | Code | F1 51% | F2 32% |
| YS | 0.96 | | XS | 0.97 | | XT | **0.87** | |
| YA | **-0.75** | -0.44 | XA | **-0.83** | -0.49 | XI | 0.76 | |
| YT | | **0.99** | XT | | **0.99** | XS | -0.71 | -0.69 |
| YI | | | XI | | | XA | | **0.99** |

Bartlett Test, Sign.=0; All Loadings Greater than 0.30

However, the results for the students with the high scores in YA do not differ very much between Table 4 and Table 7. The only difference lies in the increase of the negative factor loading of YA in the first factor. But for those respondents whose real and measured behavior was similar, the cognitive conflict between the thesis and the antithesis moves to the first factor, while the synthesis subscale moves to the second factor. This shift reflects a major difference and suggests that there is some inconsistency in the subjective cognitive structure of the two groups of students.

As a result of all these arguments, we may conclude that some of the respondents are people whose behavior in the real world may turn out to be inconsistent with their responses to the survey. This inconsistency does not necessarily result from intentional lying on the part of the respondents; instead, it is more likely the result of a psychological mechanism that works to eliminate the contradiction between the thesis and the antithesis.

### Summary

What is clearly seen by this study is that human thinking does not always correspond to the laws of logic. This is not new. Similar results have been obtained in previous studies regarding human rationality (Gardner, 1985; Johnson-Laird, 1970; Tversky & Kahneman, 1974; Wason, 1966; Wason & Johnson-Laird, 1972). Formal logic leads to problem-solving solutions that are often quite different from those chosen by human beings.

The configurations of factors in synthesis variables correspond to some defense mechanisms described by Freud - sublimation, transference and repression. Still, there is insufficient evidence in this study that these variables are measuring the same phenomenon. Other explanations are probably more appropriate in this case. Specifically, this study points toward the important role that cognitive adjustment plays in the process of facing unsolved problems and the appearance of internal contradictions in cognitive structures and leads to the occurrence of "problem dominant" (Geraskov 1994, 1998a). The problem dominant operates on an unconscious level when humans face problem situations that they are not able to solve. It becomes an unconscious regulator of conscious activity directing humans to search for a solution to a problem even when the conscious is not directly engaged. Another one of the characteristics of the problem dominant is that it expands the scope of a search, adding new lateral information in its attempts to solve the problem. This concept explains the orientation, outlined in this study, of those students scoring high on the synthesis subscale, who found a way to overcome the existing mental conflict and solve the problem. For example, when respondents want to overcome a contradiction between egoism and altruism they apparently unconsciously search for a way to resolve the conflict that will permit them to reduce tension.

Cognitive contradiction is an inherent part of human behavior. For example, there is an inherent conflict between egoism and altruism which leads some people to choose a work-focused resolution. When a person overcomes such a conflict intrinsic motivation emerges (Deci 1975). In much the same manner, the contradiction between choice of active (dynamic) or sedentary work is reduced by choosing a job that requires communication with a lot of people. Still, because the empirical phenomenon in this article is quite new, it is difficult to give an indisputable theoretical explanation.

## REFERENCES

Deci, E. (1975). *Intrinsic motivation.* New York: Plenum.

Festinger, L. A. (1957). *A theory of cognitive dissonance.* Evanston, IL: Row, Peterson.

Freud, S. (1916). *Introductory lectures on psycho-analysis.* Standard Edition, Vols. 15 and 16, London: Hogarth Press.

Gardner, H. (1985). *The mind's new science.* New York: Harper Collins Publishers, pp. 361-380.

Geraskov, E. (1994). The internal contradiction and the unconscious sources of activity. *Journal of Psychology, 128*, 625-634.

Geraskov, E. (1998 a). The Socratic method and creative teaching. In H. E. Klein (Ed.) *Creative teaching ACT1* (pp. 33-38). Needham (Boston): WACRA.

Geraskov, E. (1998 b). Dialektika na misleneto i povedenieto pri formirane na interesite. (Dialectics of thinking and behavior in forming interests.*). Strategii na obrazovatelnata I nautchnata politika, 3*, 67-76. (in Bulgarian).

Geraskov, E. (2000). Izsledvane roliata na dialektitcheskoto protivoretchie v tchoveshkata psihika. (Investigation of the role of dialectical contradiction in the human psyche). In S. Daskalova, E. Nikolova (Eds.) *Ubileen godishnik – NIO* (pp. 141-147). Sofia, Bulgaria: Natzionalen institut po obrazovanie.

Huffman, K., & Piggrem, G. (2003). *Psychology in action.* New York: Wiley.

Johnson-Laird, P. (1970). A theoretical analysis of insight into a reasoning task. *Cognitive Psychology, 1*, 134-148.

Mitchell, J., & Dodder, R.A. (1990). Neutralization and delinquency: A comparison by sex and ethnicity. *Adolescence*, Summer90, *98*, 487-498.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*, 1124-1131.

Sykes, G. & Matza, D. (1957). Techniques of neutralization: A theory of delinquency. *American Sociological Review, 22*, 664-670.

Wason, P. (1966). Reasoning. In B.Foss (Ed.) *New horizons in psychology, vol. 1*, Harmonds-worth, Middlesex: Penguin.

Wason, P. & Johnson-Laird, P. (1972). *The psychology of reasoning: Structure in content.* Cambridge, Mass.: Harvard University Press.

## APPENDIX

Examples of scales X. Y and Z. Each scale contains ten items like these:

**Scale “X”.**

*Ciril can work as a truck driver or an ambulance driver. What would you advise him to do?*

Four possible answers are offered for each item:

*1. (Sub-scale “XT”) He should work as a truck driver because it assures him of earning a high income.*

*2. (Sub-scale “XA”) He should work as an ambulance driver because he will be helpful to people.*

*3. (Sub-scale “XS”) He should select a job that he can perform at his best.*

*4. (Sub-scale “XI”) It isn't important what he decides.*

**Scale “Y”**

*Milena can work as a postal worker or as a porter in an office. What would you advise her to do?*

1. (Sub-scale “YT”) She *should* work as a postal worker because it provides a lot of exercise and independence.

2. (Sub-scale “YA”) She *should* work as a porter because it is calm and requires not much little physical effort.

3. (Sub-scale “YS”) She *should* select the job that allows her to communicate with a lot of people.

4. (Sub-scale “YI”) It isn't important what she decides.

**Scale “Z”.**

*Dimiter isn't good in mathematics, but he is interested in working in technical sciences and he would like to enroll in a technical school where he would need a strong background in mathematics. What would you advise him to do?*

1. (Sub-scale “ZT”) He *should* study harder in mathematics so he can realize his dreams.

2. (Sub-scale “ZA”) He *should* seek advice from adults and experienced people and follow their decision.

3. (Sub-scale “ZS”) He *should* give up and go to another school which doesn't require that much mathematics.

4. (Sub-scale “ZI”) It isn't important what he decides.

# School Integration and the Achievement Test Scores of Black and White Students in Savannah, Georgia

Stephen A. Taylor and Katherine C. Harris
*Armstrong Atlantic State University*

We investigated the relationship between ethnic/socioeconomic composition of schools and the achievement test scores of Black and White students in Savannah (GA) public schools. Black student scores were strongly associated with demographic variables, and declined with increasing Black enrollment and low SES enrollment. Scores of White students were largely unrelated to various measures of Black student enrollment, and showed only a moderate overall relationship to low SES enrollment.

The 1954 *Brown v. Board of Education* decision set the stage for the desegregation of public schools. Coleman (1990) notes that the rapid elimination of *de jure* segregation in the South and *de facto* segregation nationally probably represents a reorganization of speed and magnitude unprecedented in the history of formal education. Integration of schools today remains a divisive issue. Clearly, full integration was never achieved, and since the late 1980s there has been a trend towards resegregation (Hacker, 1995; Orfield, 1996; Orfield, 2001). Currently, incentives for integration (e.g., urban "magnet" schools with special educational programs to attract suburban children) are a popular tactic, but their success is limited (Coleman, 1990; Eaton & Crutcher, 1996; Kahlenberg, 2002; Morantz, 1996). Even the desirability of integration itself is controversial. Some scholars have called for separate schools with specially designed curricula for minority children (e.g., African-centered schooling, Hale-Benson, 1990; Pollard & Ajirotutu, 2000), although Orfield (2001) reports that public opinion data show consistent support for integration among Blacks and Whites.

Integration of schools is usually discussed in terms of benefits to disadvantaged minority children. When schools are desegregated, disadvantaged children can share the superior physical resources of schools that are attended by children of more privileged backgrounds (Grissmer, Flanagan, & Williamson, 1998). What most scholars have considered more important, however, is that desegregation offers a way

---

Correspondence concerning this article should be addressed to: Stephen A. Taylor, Department of Psychology, 11935 Abercorn Street, Savannah, Georgia, 31419. Email: taylorst@mail.armstrong.edu

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 301-310.

© NAJP

to immerse children from disadvantaged backgrounds in the social-psychological milieu of children from privileged backgrounds (Bankston & Caldas, 1996; Hacker, 1995). Since the "Coleman Report" (Coleman et al., 1966), it has been recognized that the immediate social environment of a child (i.e., family and fellow students) has a more powerful impact on academic achievement than more distant aspects of the social environment (e.g., teachers) and nonsocial aspects of the environment (e.g., school facilities) (Caldas, 1993; Caldas & Bankston, 2001; Coleman, 1990; Neisser, 1986). While schools can do little to alter the family life of a disadvantaged child, desegregated schools can presumably provide children with social, attitudinal, and behavioral models conducive to academic achievement during schools hours.

Although there is evidence of academic gains for disadvantaged children attending integrated schools (see Jencks & Phillips, 1998; Schofield, 1995), there is also the possibility that privileged groups may incur significant costs (Bankston & Caldas, 1996). Coleman (1990), drawing on moral philosophy, discusses in stark terms how social agencies such as public schools necessarily redistribute social resources when attempting to provide equality of opportunity. Gains for the disadvantaged can result in losses for the advantaged. To investigate this possibility, we examined the relationship of the ethnic and socioeconomic composition of schools and performance of Black and White students on a national achievement test in the public elementary and middle schools of Savannah, Georgia. In 2001 public schools in Savannah enrolled 34,208 students, of which 71% were minority and 52% were eligible for federal free or reduced price lunch programs. Individual schools in the system vary considerably in ethnic and socioeconomic composition; we investigated how the test scores of Black and White students varied in relationship to the relative frequency of socioeconomic and ethnic groups in individual schools. We expected that higher scores for Black students would be associated with greater White student enrollment and fewer students eligible for federal lunch programs. We expected the scores of White students to decline with greater Black student enrollment and increasing numbers of students eligible for federal lunch programs.

## METHOD

### Data

In 2001 the Stanford Achievement Series, 9th Edition (Stanford 9), a widely used national achievement test, was administered in the Savannah-Chatham County Public School System (SCCPSS) as part of a statewide annual assessment program. Students taking the test consisted of 2725 3rd grade students, 2741 5th grade students, and 2327 8th grade students in all 31 elementary and 13 of 14 middle schools in the system. Stanford 9 scores for each school in SCCPSS were obtained from the State of Georgia Office of Education Accountability website (http://www.ga-oea.org). Scores were expressed in national percentile ranks for five subscales: total reading, language, total mathematics, science, and social science. Scores were collected for Blacks and Whites only, as they comprised 94% of the students (65% Black, 29% White) in SCCPSS, and no other ethnic group exceeded 2%. Some scores were not available. One elementary school did not report any data for 5th grade, and two middle schools did not report any test score data. Additionally, the State of Georgia Office of Education Accountability does not provide test scores if fewer than 10 students were in an ethnic group. All 31 elementary and 11 middle schools in this analysis had at least 10 Black students at each grade level. However, only 20 schools had 10 or more White 3rd grade students, 21 schools had 10 or more White 5th grade students, and 10 middle schools had 10 or more White 8th grade students.

Additional demographic data were provided by the local Office of Accountability and Assessment for the Chatham County Board of Education. The office provided the percentages of Black and White students attending each school and percentages of Black and White students eligible for free lunches at each school.

**Procedure**

In order to determine if the 5 subscales of the Stanford 9 (total reading, language, total mathematics, science, and social science) formed a unified construct, we used multiple Cronbach's alphas to test the internal consistency reliability of the measure for scores of Black and White 3rd, 5th, and 8th grade students. All alphas were greater than .94. These alphas justified averaging the subscales to yield an overall achievement score for Black students and White students at each grade level.

For each grade, we then correlated Black and White overall achievement scores *at each school* with the following variables *for each school*:

1. % Black. The percentage of Black students enrolled.

2. % Black Free Lunch. The percentage of Black students whose families where eligible for free lunches. This was determined by dividing the total number of Black students eligible for free lunches by the total enrollment number for the school.

3. % Black Not Eligible. The percentage of Black students whose families were not eligible for free lunches. This was determined by dividing the total number of Black students not eligible for free lunches by the total enrollment for the school.

4. % White. The percentage of White students enrolled.

5. % White Free Lunch. The percentage of White students whose families were eligible for free lunches. This was determined by dividing the total number of White students eligible for free lunches by the total enrollment number for the school.

6. % White Not Eligible. The percentage of White students whose families were not eligible for free lunches. This was determined by dividing the total number of White students not eligible for free lunches by the total enrollment for the school.

7. % Free. The overall percentage of enrolled students eligible for free lunches.

## RESULTS

### Descriptive Statistics

Descriptive statistics for the overall achievement scores at schools for Blacks and Whites in grades 3, 5, and 8 can be found in Table 1. Consistent differences in overall achievement scores are evident at all grade levels. Table 2 provides the descriptive statistics for all the ethnic/socioeconomic variables used in the analysis. The schools varied considerably in demographic characteristics, ranging from 0% to 70% White students, and 13% to 77% eligible for free lunches. Additionally, it has been previously established that the percentages of Black students and students eligible for free lunches are highly correlated ($r = .89$) in this data set (Harris & Taylor, 2002).

TABLE 1 Overall Achievement Scores at Schools for Black and White Students in Grades 3, 5, and 8

| | N (schools) | Mean | SD | Range |
|---|---|---|---|---|
| Grade 3 | | | | |
| Black | 31 | 29.5 | 8.2 | 17.4 - 52.4 |
| White | 20 | 60.9 | 13.2 | 38.2 - 91.6 |
| Grade 5 | | | | |
| Black | 30 | 32.9 | 8.4 | 20.6 - 52.4 |
| White | 21 | 60.8 | 13.1 | 38.2 - 89.0 |
| Grade 8 | | | | |
| Black | 11 | 27.4 | 6.7 | 16.6 - 38.0 |
| White | 10 | 54.1 | 17.1 | 27.0 - 89.4 |

### Bivariate Relationships

Table 3 displays the correlations between ethnic/socioeconomic variables at a school and the achievement scores of Black and White students. It is readily apparent that both socioeconomic and ethnic measures for a school are more strongly related to achievement scores of Black students than White students. Black students' scores have the strongest negative correlation with the percentage of students eligible for free lunches. However, the scores of Black students also have large negative correlations with the percentage of Black students at a school, and the percentage of Black students eligible for free lunches, and large positive correlations with the percentage of White students and the percentage of White students not eligible for free lunches.

TABLE 2 Descriptive Statistics (%) for all Socioeconomic/Ethnic Variables

| Variable | N (schools) | Mean | SD | Range |
|---|---|---|---|---|
| | Elementary Schools | | | |
| % Black | 31 | 66 | 24 | 24 – 99 |
| % Black Free Lunch | 31 | 39 | 19 | 9 – 76 |
| % Black Not Eligible | 31 | 27 | 8 | 11 – 41 |
| % White | 31 | 29 | 22 | 0 – 70 |
| % White Free Lunch | 31 | 5 | 4 | 0 – 18 |
| % White Not Eligible | 31 | 24 | 20 | 0 – 66 |
| % Free Lunch | 31 | 45 | 17 | 15 – 77 |
| | Middle Schools | | | |
| % Black | 11 | 67 | 22 | 39 – 96 |
| % Black Free Lunch | 11 | 34 | 17 | 11 – 64 |
| % Black Not Eligible | 11 | 34 | 7 | 22 – 43 |
| % White | 11 | 28 | 21 | 2 – 59 |
| % White Free Lunch | 11 | 4 | 3 | 0 – 10 |
| % White Not Eligible | 11 | 25 | 20 | 1 – 56 |
| % Free Lunch | 11 | 39 | 15 | 13 – 65 |

The patterns of correlations for White students are strikingly different. Only small correlations exist between White student achievement scores and the variables based on Black student frequency. White student achievement scores have a moderate relationship to the percentage of students eligible for free lunches, and at the elementary level show a strong negative relationship with the percentage of White students eligible for free lunches.

## DISCUSSION

In general, our results indicate that the achievement scores of Black students are strongly associated with ethnic and socioeconomic composition of schools. As expected, higher scores are associated with fewer students eligible for free lunches and greater White enrollment.

The scores of White students however, seem largely unrelated to measures of Black enrollment, at least in schools having 10 or more White students in the tested grades. White students' scores do show some relationship to socioeconomic measures, but the correlations are roughly half the value observed for Black students.

TABLE 3 Correlations Between Ethnic/Socioeconomic Variables at a School and Overall Achievement Scores of Black and White Students

| Grade | N | % B | % BFL | %BNE | % W | % WFL | %WNE | % F |
|---|---|---|---|---|---|---|---|---|
| | | | | Overall Achievement Scores for Black Students | | | | |
| Grade 3 | 31 | -.589** | -.619** | -.249 | .544** | .120 | .586** | -.665** |
| Grade 5 | 30 | -.446* | -.512** | -.087 | .438* | -.029 | .501** | -.597** |
| Grade 8 | 11 | -.688* | -.788** | -.253 | .698* | .308 | .705* | -.821** |
| | | | | Overall Achievement Scores for White Students | | | | |
| Grade 3 | 20 | .056 | -.027 | .162 | -.075 | -.617** | .096 | -.297 |
| Grade 5 | 21 | -.072 | -.140 | .098 | .069 | -.580** | .229 | -.354 |
| Grade 8 | 10 | -.157 | -.275 | .151 | .145 | -.371 | .211 | -.387 |

*Note*. * = .05; ** = .01 (two-tailed tests).
N=schools; B=Black; W=White; NE=Not Eligible; L=Lunch; F=Free

There seems to be a general agreement that integration improves the achievement scores of Black students (Bankston & Caldas, 1996; Grissmer, Flanagan, & Williamson, 1998; Schofield, 1995; for contrasting views, see Coleman, 1990; Hacker, 1995), and our results are consistent with this notion. There is a voluminous literature on the mechanisms by which integration might result in higher test scores (see above citations). In addition to higher test scores, there is evidence that minority students that have experienced integrated education seem to have more success in integrated college, employment, and living environments (Orfield, 2001; Schofield, 1995). Bankston and Caldas (1996), based on their study of Louisiana public schools, suggest that elevated scores of Black students in integrated schools constitutes an argument against schools that concentrate minority students, either by design (e.g., African-centered schools) or as a result of neighborhood population characteristics. Our results are consistent with that argument. However, we should point out that none of the schools in our data set with high concentrations of minority students have specially designed curricula. Specially designed curricula are a key feature of schools that concentrate minority students by design (see Hale-Benson, 1990: Pollard & Ajirotutu, 2000).

Perhaps the most interesting aspect of this study is the observation that Stanford 9 scores of White students in Savannah public elementary and middle schools seem relatively unassociated with the demographic variables studied, particularly measures of Black enrollment. In reference to Coleman's (1990) analysis, the redistribution of resources in these schools may benefit the disadvantaged group (Blacks in this data set, see Tables 1 and 2) substantially, at little cost to the advantaged group (Whites). Of the nine measures of Black enrollment (three measures per three grade levels), only five are negatively correlated with White achievement scores, and only one of these correlations has an absolute value greater than .2. The minimal impact of integration on White achievement scores, combined with the apparently positive impact on Black achievement scores, would seem to make a powerful argument for integration. Orfield (2001) details additional benefits of integrated schooling beyond test scores for both Black and White students. Further research might determine what level of integration is optimal not only in terms of achievement scores, but is psychologically most beneficial for Black and White students and acceptable to their parents (Bankston & Caldas, 1996; Hacker, 1995).

A final point of discussion concerns the prevalence of private schools. The exodus of White students from public school systems as a result of desegregation policies is a well-documented phenomenon (see Coleman, 1990; Orfield; 2001; Orfield & Eaton, 1996). In the South, the primary response of Whites was the formation of private schools (Coleman, 1990). Savannah clearly fits this general pattern. In the 1998-1999 school year, 22% of school age children in the Savannah-Chatham county area were enrolled in private schools (Boatright & Bachtel, 2000). These schools have overwhelmingly White enrollment, and because of their tuition requirements, are unlikely to have students from low SES families. While there are various reasons why parents might wish to enroll their children in private school (e.g., religious considerations, school location, physical facilities), it seems that fear of a negative impact of integration on educational achievement would be a major consideration. Our data indicate such a concern is probably unwarranted, at least for elementary and middle schools in the Savannah area. The prevalence of private schools has implications not readily apparent. For many parents, the decision to send their children to a private school results in a substantial financial burden, utilizing resources that could be used to enrich the lives of their children in other ways. Additionally, the large number of students enrolled in private schools in the Savannah area no doubt constitutes a substantial "brain drain" from the public schools, as these students are from demographic categories most likely to excel in the school environment. Furthermore, the parents of these students are likely to be actively involved with the school in a positive manner (e.g., school activities, PTA) (Balli, 1996). It is hard to imagine how the enrollment of these students in public schools could be harmful, and the addition of their talents could be beneficial in many ways.

## REFERENCES

Balli, S.J. (1996). Family diversity and the nature of parental involvement. *The Educational Forum, 60*, 149-155.

Bankston, C. III & Caldas, S.J. (1996). Majority African American schools and social injustice: The influence of de facto segregation on academic achievement. *Social Forces, 75*(2), 535-555.

Boatright, S.R. & Bachtel, D.C. (Eds.). (2000). *The 2000 Georgia county guide.* Athens GA: University of Georgia, College of Agricultural and Environmental Sciences, Center for Agribusiness and Economic Development.

Caldas, S.J. (1993). Reexamination of input and process factor effects on public school achievement. *Journal of Educational Research, 86*(4), 206-214.

Caldas, S.J. & Bankston, C. III (2001). Effect of school population socioeconomic status on individual academic achievement. *Journal of Educational Research, 90*(5), 269-277.

Coleman, J.S. (1990). *Equality and educational achievement.* San Francisco: Westview Press.

Coleman, J.S., Campbell, E.Q., Hobson, C.J., McPartland, J., Mood, A.M., Weinfield, F.D., et al. (1966). *Equality of educational opportunity.* Washington, DC: U.S. Government Printing Office.

Eaton, S.E., & Crutcher, E. (1996). Magnets, media, and mirages: Prince George's County's "miracle" cure. In G. Orfield & S. E. Eaton (Eds.), *Dismantling Desegregation* (pp. 265-289). New York: The New Press.

Grissmer, D., Flanagan, A., & Williamson, S. (1998). Why did the Black-White test score gap narrow in the 1970s and 1980s? In C. Jencks & M. Phillips (Eds.), *The Black-White test score gap* (pp.182-226). Washington D.C.: Brookings Institute Press.

Hacker, A. (1995). *Two nations: Black and white, separate, unequal, and hostile.* New York: Ballintine Books.

Hale-Benson, J. (1990). Visions for children: Educating Black children in the context of their culture. In K. Lomotey (Ed.), *Going to School: The African-American Experience* (pp. 209-222). Albany, New York: State University of New York Press.

Harris, K.C. & Taylor, S.A. (2002, November). *Factors that predict standardized test scores in Savannah-Chatham County public schools.* Paper presented at the Georgia Sociological Association Meetings, Savannah, GA.

Jencks, C. & Phillips, M. (Eds.). (1998). *The Black-White test score gap.* Washington D.C.: Brookings Institute Press.

Kahlenberg, R.D. (2002). Beyond Brown: The new wave of desegregation litigation. *Educational Leadership, 59*(4) 13-19.

Morantz, A. (1996). Money and choice in Kansas City: Major investments with modest returns. In G. Orfield & S. E. Eaton (Eds.), *Dismantling Desegregation* (pp. 241-263). New York: The New Press.

Neisser, U. (Ed.). (1986). The school achievement of minority children: New perspectives. Hillsdale NJ: Lawrence Erlbaum Associates.

Orfield, G. (1996). The growth of segregation: African Americans, Latinos, and unequal education. In G. Orfield & S. E. Eaton (Eds.), *Dismantling Desegregation* (pp. 53-71). New York: The New Press.

Orfield, G. (2001). *Schools more separate: Consequences of a decade of resegregation.* Retrieved February, 17, 2003 from Harvard University, Civil Rights Project Web site:http://www.civilrightsproject.harvard.edu/research/deseg/Schools_More_Separate.pdf

Orfield, G. & Eaton, S. E. (Eds.). (1996). *Dismantling Desegregation.* New York: The New Press.

Pollard, D.S. & Ajirotutu, C.S. (Eds.). (2000). *African centered schooling in theory and practice.* London: Bergin & Garvey.

Schofield, J. W. (1995). Review of research on school desegregation's impact on elementary and secondary school students. In J.A. Banks & C. M. Banks (Eds.) *Handbook of research on multicultural education* (pp.597-616). New York: McMillan.

---

*Note*: The authors wish to thank Drs. John Kraft and Vann Scott for their helpful suggestions on an earlier draft of this paper.

# Emotive Writing Moderates the Relationship Between Mood Awareness and Athletic Performance in Collegiate Tennis Players

Vann B. Scott Jr., Renee D. Robare, David B. Raines,
Sarah J. M. Konwinski,
Julie A. Chanin & Rachel S. Tolley
*Armstrong Atlantic State University*

An emotive writing intervention (Pennebaker, 1997a, 1997b) was applied to improve our understanding of the previously observed negative relationship between mood awareness and the athletic performance of collegiate tennis players (Scott, Stiles, Raines, & Koth, 2002). A comparison group, interrupted time series design was employed to study a sample of 13 Division II collegiate tennis players who participated during the Spring 2002 season. It was expected that participants who were classified as mood monitors would experience a differential benefit from emotive writing compared to those classified as mood labelers. Mood monitors' athletic performance showed a delayed benefit from the writing intervention while mood labelers' athletic performance showed no appreciable improvement following intervention. Based on these data, sport psychologists should consider closely inspecting the mood awareness tendencies of athletes before attempting an emotive writing intervention.

One of the key concerns within sport psychology literature has been a focus on delineating the relationship between personality and athletic performance (Silva, 1984). A recent exploration of some of the personality traits that relate to athletic performance of collegiate tennis players revealed that mood awareness and rumination predicted performance in the players (Scott, Stiles, Raines, & Koth, 2002).

Mood awareness is described as an individual difference in the tendency to notice and become aware of mood states (Swinkels & Giuliano, 1995). Mood awareness consists of two components – mood monitoring and mood labeling. Mood monitors are people who cling to a mood once they become aware of the mood state, and they have difficulty clearing their minds and focusing on other tasks. In contrast, mood labelers tend to readily name the mood state and do not become preoccupied with their mood. Swinkels and Giuliano proposed that

---

*Author info*: Correspondence should be addressed to: Vann B. Scott, Jr., Ph.D., Department of Psychology, Armstrong Atlantic State University, 11935 Abercorn Street, Savannah, GA 31419, email: scottvan@mail.armstrong.edu

*North American Journal of Psychology*, 2003, Vol. 5, No. 2, 311-324.

© NAJP

"compared to mood labeling, mood monitoring may tax an individual's resources to a greater extent; that is, attention that is directed toward scrutinizing one's mood is attention taken from other concerns" (1995, p. 940). Evidence supporting this hypothesis was garnered in Study 4 of Swinkels' & Giuliano's research (1995) in which they found that mood monitors tend to report more rumination in their attempts at mood regulation. Swinkels' & Giuliano's findings are also consistent with other evidence (e.g., Nolen-Hoeksema, 1990) that ruminative coping responses, which focus attention on the negative event and mood, are more likely to prolong depression and dysphoria than to bring an end to the depressive episode.

Based on the findings of Swinkels & Giuliano (1995), Scott et al. (2002) hypothesized that the increased level of consumption of cognitive resources experienced by mood monitors results in a disadvantage on the tennis court in comparison to their mood labeling counterparts because tennis demands a high level of mental focus. Tennis players who are mood monitors are likely to have fewer cognitive resources to devote to the proper execution of their game. In support of this hypothesis, Scott et al. (2002) found that mood labeling was positively correlated with athletic performance while mood monitoring was negatively correlated with athletic performance. These findings beg the question of how to best assist mood monitoring tennis players to cope with their mood. A way of alleviating the cognitive demands placed on mood monitoring tennis players could be to teach them a different way of dealing with their moods. If tennis players could be provided with a system that mitigates the influence of other cognitive demands, then it may be possible to positively impact their athletic performance.

In our search for a fruitful technique to teach mood monitoring tennis players more constructive ways of dealing with their mood information, we chose Pennebaker's emotive writing procedure (1997a, 1997b). Pennebaker's procedure is a way of dealing with the problem of thought suppression – the intentional and effortful attempt to push negative thoughts out of consciousness. Pennebaker assumes that thought suppression is a natural, yet stressful, reaction to negative life events that consumes cognitive resources. Frequent and chronic thought suppression is believed to have a cumulative negative effect on one's cognitive processing ability because the limited pool of cognitive resources must be divided and then devoted to yet another task – in this case, thought suppression. In this way, thought suppression becomes yet another processing drain on an overtaxed system and can be considered a chronic stressor on the body. Pennebaker believes his emotive writing procedure is effective in reducing the incidence of chronic thought suppression because it allows an individual to relieve the pressure of suppressing a thought. Emotive writing is believed to achieve this therapeutic effect by assisting individuals in the assimilation of the stressor into their own preexisting cognitive schemas, thereby assisting in the consolidation of memory and freeing working memory for other purposes (Klein, 2003). Using the emotive writing procedure, a person can stop fixating on the thought because the thought and the preexisting cognitive schemas are brought into synchrony. Therefore, more cognitive resources are free for problem solving and task performance.

Generally, Pennebaker's procedure calls for the participant to write about a negative event from his or her past for 15 minutes a day for three consecutive days. Using the writing procedure, Pennebaker and his research team have consistently observed improvements in health and relief of tension. Additionally, Pennebaker found faster reemployment following a layoff for those individuals assigned to the writing condition compared to those individuals in the control group (see Pennebaker, 1997b).

While Pennebaker's technique has been shown to be highly effective in assisting individuals to achieve some relief from their tendency to repress thoughts, his technique has not been applied in the sport psychology field. In the present research, we have attempted to: 1) replicate the findings of Scott et al. (2002), which demonstrated a positive correlation between mood labeling and athletic performance and a negative correlation between mood monitoring and athletic performance; and 2) apply Pennebaker's procedure to determine its differential impact on the athletic performance of tennis players with naturally varying degrees of mood awareness. The latter of these two goals was guided by the series of hypotheses as delineated below.

Pennebaker has pointed out that the effects of the emotive writing process can be observed in several ways. First, people show a marked decrease in electrodermal activity during the writing session, signaling the relaxation of the sympathetic nervous system (Pennebaker, 1997b). Therefore, as a test of the effectiveness of the writing procedure manipulation, we predicted that tennis players would experience a reduction in electrodermal activity during their writing sessions. Second, it has been repeatedly demonstrated that people engaged in the emotive writing process experience an initial increase in negative affect accompanied by a delayed improvement in cognitive functioning, such as improved GPAs (Pennebaker, Hughes, & O'Heeron, 1987) or working memory function (Klein, 2003). Therefore, we predicted that all tennis players would experience an initial decrease in athletic performance following the emotive writing procedure. The impact of the mood awareness individual difference variable on athletic performance was expected to vary depending upon the classification of participants as mood monitors or mood labelers.

Since mood monitors tend to experience negative affect more readily than mood labelers, and since negative affect is usually not instrumental to cognitive functioning, it was predicted that mood monitors would show either no improvement or perhaps even a deficit in athletic performance immediately following the writing procedure. The writing procedure requires people to let go of unexpressed feelings – a process that is highly unnatural for mood monitors. The mood monitors should, after a period of adjustment to a new way of dealing with their emotions, experience an improvement in athletic performance. Mood labelers, on the other hand, are likely to find that the emotive writing process facilitates what already comes naturally to them. Therefore, it was predicted that the mood labelers would experience only a very modest decrease in athletic performance following the initiation of the writing procedure, and their overall level of athletic performance improvement would be relatively limited.

## METHOD

### Overview

A comparison group interrupted time series design was used to assess the effects of an emotive writing intervention on the athletic performance of intercollegiate tennis players. There were two measures of athletic performance: the Measurement Instrument for Tennis Performance (MITP; Rees, Hardy, & Ingledew, 2000) and observed point-by-point match play (Scott et al., 2002). The MITP is a post match self-report questionnaire, and trained observers recorded the point-by-point match play. After 4 weeks of competitive play, an emotive writing intervention was applied. The intervention required the participants to complete a 3-day series of emotive writing. The first 4 weeks of observation established a baseline level of performance for each group of participants. This baseline was later compared to post intervention performance. After all participants were informed of the general research goals and informed consent was obtained, they completed a battery of questionnaires prior to the start of the Spring season. During the regular season, players were randomly selected for observation and each player was asked to complete the MITP (Rees et al., 2000) at each home match. The match day data gathering procedure was incorporated into the players' normal routine of match preparation, involving warm-up and stretching, to minimize the intrusiveness of the procedure. Participants were informed that they could withdraw their participation at any time without penalty.

### Participants

Thirteen NCAA Division II intercollegiate tennis players participated in the season-long (February to May) study with no tangible reward. The players were 6 males and 7 females with an age range of 19-24 ($M$ = 21.27, $SD$ = 1.73) years.

### Materials & Apparatus

*Mood Awareness Scale.* The Mood Awareness Scale (MAS; Swinkels & Giuliano, 1995) is a 10-item measure of mood awareness with two 5-item subscales: mood monitoring (MM) and mood labeling (ML). Both subscales have been shown to have acceptable reliability and validity coefficients. The response format is a Likert-type scale ranging from 1 (disagree very much) to 6 (agree very much). Internal consistency reliability measures (Cronbach's alpha) for both MM and ML ranged from lows of .85 and .69 to highs of .88 and .80, respectively, across four samples (Swinkels & Giuliano, 1995). These reliability coefficients were consistent with those observed in our own sample: Cronbach's alphas of .92 for MM and .83 for ML. The predictive validity of the MAS was supported by statistically significant criterion-related validity coefficients for theoretically predicted relationships with other constructs. ML was correlated .30 with Positive Affect (PA) but unrelated to Negative Affect (NA) whereas MM was correlated .22 with NA but was unrelated to PA (Swinkels & Giuliano, 1995). In the current study, the criterion-related validity of the MAS was supported by the correlation between MM and Scott-McIntosh Rumination Inventory (SMRI; Scott & McIntosh, 1999) scores, $r$ (11) = .56, $p < .05$. This correlation is consistent with the theoretical predictions of the relationships between these measures and has been observed in previous research (Scott, 1999).

*Scott-McIntosh Rumination Inventory.* The Scott-McIntosh Rumination Inventory (SMRI) is a 9-item trait measure of rumination with a Likert-type response scale ranging from 1 (does not describe me well) to 7 (describes me well). The SMRI consists of three subscales: emotionality, distraction, and motivation; each one of which has been shown to have acceptable reliability and validity (Scott & McIntosh, 1999). The previously reported internal consistency reliability estimates (Cronbach's alpha) for the SMRI and its subscales ranged from .57 to .60 for the overall scale, .68 to .69 for the emotionality subscale, .67 to .77 for the motivation subscale, and .66 to .68 for the distraction subscale (Scott & McIntosh, 1999). These coefficients are, with the exception of distraction, consistent with the Cronbach's alphas obtained in the current sample: .73 for the overall scale, .82 for emotionality, .70 for motivation, and .46 for distraction.

*Measurement Instrument for Tennis Performance.* Each participant completed the Measurement Instrument for Tennis Performance (MITP: Rees et al., 2000) after each match. The MITP is a 28-item questionnaire consisting of seven 4-item factors that measure various aspects of the self-reported match performance of a tennis player following a match. Responses to the base question, "During this match, to what extent did you …", were measured on a 4-point Likert-type scale with 0 (not at all) to 3 (a lot) as the anchors. The 7 factors making up the MITP are listed here with a sample item of each factor in parentheses: Execution of Plan (Keep to a routine), Loss of Composure (Get wound up), Feeling Flat (Feel sluggish), Determination (Work hard on each point), Worry (Worry about your shots), Flow (Keep a consistent standard), and Effective Tactics (Use effective strategies). During the development of the MITP, the Effective Tactics, Execution of Plan, Determination, and Flow subscales were all strongly correlated with one another, ranging from .68 to .90 (Rees et al., 2000). In the current study, the items comprising these factors formed our primary measure of athletic performance with a Cronbach's alpha of .86.

*Electrodermal activity (EDA).* During administration of the emotive writing intervention, each participant's electrodermal response was measured using a Thought Technology, Inc. ProComp+™ (Model AD2497) utilizing an SC-flex+/ Pro™ Galvanic Skin Response sensor (Model SA9309) with a PRO-SB™ Interface (Model SA8950) connected to a standard PC with a Microsoft Windows 95 operating system. Biograph software version 1.01 was used to record and analyze the electrodermal activity measures. After one minute of writing, a 30-second sample of EDA was extracted for each participant, and the mean EDA was calculated. This was repeated after 2 minutes of writing.

## Procedure

*Observer Training.* Each observer was trained using six formal training classes lasting 2 hours each. An instructional text for the sport of tennis (Kriese, 1993) was used to develop the training sessions. Training involved teaching the observers to recognize the various strokes of the game and emphasized the scoring rules for the game of tennis. Observers were instructed on the use of an adaptation of the Paul Scarpa scoring system (Kriese, 1993), in which the point-by-point breakdown of the match is recorded for later analysis of winner-to-unforced error ratio, first serve percentage, and forced error rate. After the completion of training, each observer's accuracy in recording and transcribing match performance was evaluated using videotaped network broadcasted professional tennis matches. All observers obtained at least 88% accuracy (*M* = 91.38, *SD* = 2.30) in recording and transcribing match performance prior to the beginning of the observations of the participants in the field.

*Observations.* Nine days of observations were used in the analysis based on the availability of all participants for observation during home matches. On each day of competition, and as a part of their normal warm-up and stretching routine, all players were asked to complete a pre-match rumination measure (for another study) approximately one hour prior to the start of doubles play. To help control the level of evaluation apprehension participants might experience, players were not informed of whether they were to be observed on any given day. During the break between the end of doubles play and the beginning of singles play, participants were randomly selected for observation, and observers were randomly assigned a player. The observation method was modeled from Scott et al. (2002) except that audio recorders replaced handwritten scoring procedures. During the match, the observer positioned himself or herself to observe the match in a manner that would be unobtrusive to the participants. The observer was responsible for recording the point-by-point progress of the match using a hand-held audio microcassette recorder. This method allowed the accurate recording of all pertinent information while allowing the observer to maintain focus on the match. The audiotapes facilitated the analysis of the match for the first serve percentage, the number of unforced errors, winners and forced errors committed by both players during the match.

*Intervention.* Participants were observed for four matches to establish a pre-intervention baseline. After the baseline was established, each participant was subjected to an emotive writing intervention. The writing intervention was implemented 5 weeks into the regular Spring season. It entailed 3 consecutive days of 15-minute writing sessions about deeply emotional experiences. Exact instructions were provided to participants as follows:

> For the next three days, I would like for you to write about your very deepest thoughts and feelings about an extremely important emotional issue that has affected you and your life. In your writing, I'd like you to really let go and explore your very deepest emotions and thoughts. You might tie your topic to your relationships with others, including parents, lovers, friends, or relatives; to your past, your present, or your future; or who you have been, who you would like to be, or who you are now. You may write about the same general issues or experiences on all days of writing or on different topics each day. All of your writing will be completely confidential. Don't worry about spelling, sentence structure, or grammar. The only rule is that once you begin writing, continue to do so until your time is up (Pennebaker, 1997b, p.162).

During the first day of intervention, each participant's tension levels were monitored using a skin conductance measure of electrodermal activity. These data served as a manipulation check to ensure that the typical reduction in autonomic nervous system activity was observed during the writing procedure as reported in previous research (Pennebaker, 1997b).

*Postintervention observations.* Five weeks of matchday observations were made following the intervention to measure its impact on athletic performance. These observations were completed in the same way as preintervention matchday observations.

*Categorization of Comparison Groups.* Following the conceptualization of mood monitoring and mood labeling as independent constructs, each resulting in a different personality profile (Swinkels & Giuliano, 1995), the players were categorized into the following groups for comparison: (1) high mood labelers vs. low mood labelers and (2) high mood monitors vs. low mood monitors. Due to scheduling conflicts, two players were unable to undergo the emotive writing treatment with the rest of the team and thus their data were eliminated from all statistical analyses. The remaining 11 players were categorized as high mood labelers ($n = 3$) and/or high mood monitors ($n = 3$) only if their scores on the respective sub-scales placed them one standard deviation above the population mean for each scale (i.e., greater than 25 on either scale). Otherwise the participants were categorized as low mood labelers ($n = 8$) and/or mood monitors ($n = 8$).

## RESULTS

### Manipulation Check

Based on past research, the manipulation of emotive writing was expected to result in a reduction of electrodermal activity (Pennebaker, 1997b). In a repeated measures *t*-test, the sample showed the expected reduction in electrodermal activity from the beginning of the writing session ($M = 8.00$, $SD = 5.99$) to two minutes into the writing session ($M = 6.66$, $SD = 5.27$), $t(9) = 3.09$, $p < .05$.

### Scott et al. (2002) replication

Previous research by Scott et al. (2002) indicated that mood awareness (Swinkels & Giuliano, 1995) and rumination (Scott & McIntosh, 1999) were correlated with various measures of athletic performance. In the present sample, the observer's athletic performance recordings were used to generate a global measure of athletic performance that would be equal to that of Scott et al. (2002). Specifically, for each set of tennis in which a player was observed, a measure of first serve percentage (TFSP) was determined by dividing the number of serves that were "good" (i.e., the term used to describe that the ball landed in the proper service box without a let or fault being called) on the first attempt at service delivery for each point divided by the total number of serves (i.e., the sum of first serves, second serves, and double-faults). A measure of forced error ratio (TFER) was calculated by summing the points won by forcing the opponent to make an error and dividing that number by the total number of points for the game (forced errors + winners + unforced errors). Finally, a ratio of winners to unforced errors (TWUER) was calculated by dividing the total number of winners by the total number of points that were not forced errors (winners + unforced errors). From these calculations, a composite measure of athletic performance (CPERF) was formed by dividing the sum of TFSP and TWUER by 2. The CPERF measures were averaged across all sets during the pre-intervention phase of the study to create a measure of observed pre-intervention athletic performance (PREOPERF), and the CPERF measures were averaged across all sets during the post-intervention phase of the study to create a post-intervention athletic performance measure (POSTOPERF). Finally, an athletic performance improvement score (OPERFDIFF) was calculated by subtracting the PREOPERF measure from the POSTOPERF. Therefore, a positive difference score reflects improvement in athletic performance after intervention.

The present sample provided support for the findings of Scott et al. (2002) by demonstrating: (1) a relationship between rumination and average winner-to-unforced error ratio, $r_s(11) = -.72$, $p < .01$, and (2) a relationship between mood monitoring and the OPERFDIFF measure (degree of improved athletic performance recorded by observers during the season), $r_s\,(11) = -.75$, $p < .01$.

**Emotive Writing and Athletic Performance**

The overall purpose of the current research was to assess the effect of Pennebaker's emotive writing paradigm on the previously observed negative relationship between mood monitoring and athletic performance. In short, we attempted to use Pennebaker's procedure to induce mood monitoring tennis players to process their moods to facilitate athletic performance.

*Mood Monitoring Baseline.* An important step in conducting a time-series study is to establish that no pre-existing differences are present in participants prior to the implementation of a treatment. Examination of Figure 1 indicates that there was no difference in the athletic performance of high and low mood monitors during the baseline period (first four observations), $F < 1.00$.

*Mood Monitoring Postintervention.* As predicted, the high mood monitors experienced a delayed improvement in self-reported athletic performance following intervention relative to the low mood monitors. A significant (2 X 6) interaction between mood monitoring and Observations 4 to 9 emerged, $F$ (5, 45) = 2.60, $p < .05$, indicating a differential effect of Pennebaker's writing intervention on athletic performance for low vs. high mood monitors.

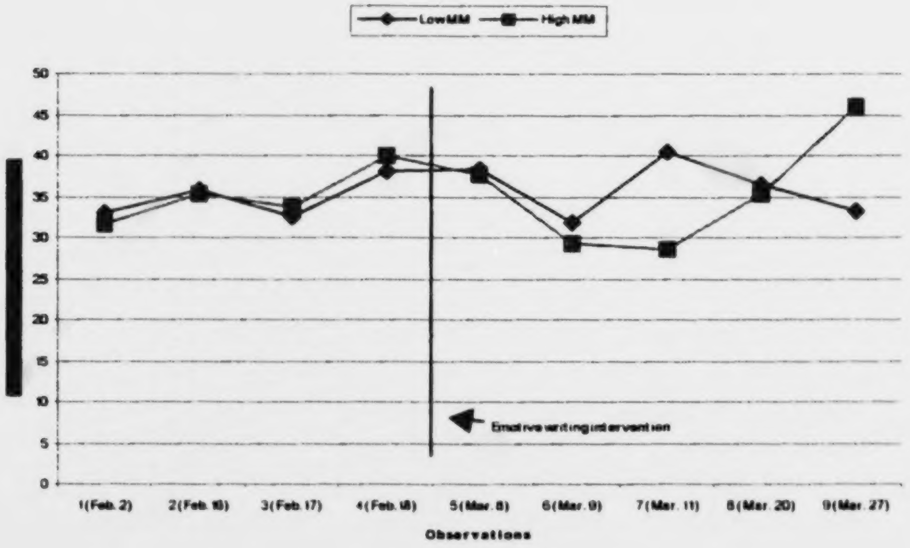

*Figure 1.* Mean score on the Measurement Instrument for Tennis Performance (MITP) as a function of mood monitoring and observation.

Analysis of within subjects contrasts revealed a significant interaction for mood monitoring and Observations 4 to 7, $F$ (1, 9) = 5.66, $p < .05$. Analyses of simple main effects revealed that: (1) there was no effect for mood monitoring at Observation 4, $t < 1$, (2) there was no change in low mood monitors' performance from Observation 4 to Observation 7, $t(3)<1$ there was no change in high mood monitors' performance from Observation 4 to Observation 7, $t < 1.95$, and (4) low mood monitors' performance at Observation 7 ($M$ = 40.50, $SE$ = 2.83) was better than high mood monitors' performance at Observation 7 ($M$ = 28.67, $SE$ = 4.91), $t$ (9) = 2.44, $p < .05$. As predicted, high mood monitors experienced an initial deficit in performance following the writing intervention.

A significant interaction was observed for mood monitoring and Observations 7 to 9, $F$ (2, 18) = 9.11, $p < .005$. Analysis of within subjects contrasts revealed a significant interaction for mood monitoring and Observations 7 to 9, $F\ (1, 9) = 27.22$, $p < .005$. Simple main effects analyses revealed that: (1) high mood monitors experienced a significant increase in performance from Observation 7 ($M = 28.67$, $SE = 4.91$) to Observation 9 ($M = 46.00$, $SE = 1.16$), $t(2) = 3.31$, $p < .05$, one-tailed, (2) low mood monitors experienced a significant decrease in performance from Observation 7 ($M = 40.50$, $SE = 2.38$) to Observation 9 ($M = 33.25$, $SE = 3.17$), $t\ (7) = 3.34$, $p < .05$, and (3) by Observation 9, high mood monitors were performing better ($M = 46.00$, $SE = 1.16$) than low mood monitors ($M = 33.25$, $SE = 3.17$), $t\ (9) = 2.36$, $p < .05$. These results are interpreted to represent the predicted delayed benefit of the emotive writing intervention for high mood monitors.

*Mood Labeling Baseline.* Examination of Figure 2 indicates that low and high mood labelers did not differ from one another in athletic performance during the baseline period prior to intervention. A 2 X 4 (low/high mood labeling X observation) mixed factorial analysis of variance failed to show a significant interaction effect, $F\ (3, 27) = .72$, $p = .54$.

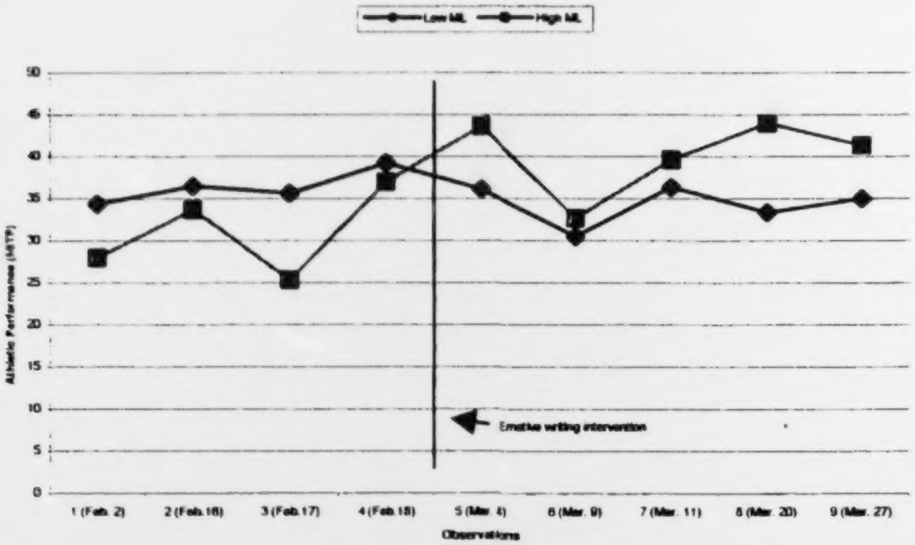

*Figure 2.* Mean score on the Measurement Instrument for Tennis Performance (MITP) as a function of mood labeling and observation.

*Mood Labeling Postintervention.* A 2 (high/low mood labeling) X 6 (observations) mixed factorial ANOVA revealed no significant interaction or main effects (all *p*'s > .34), indicating no evidence of a differential effect on athletic performance for low vs. high mood labeling tennis players. This finding is interpreted as partial support for the prediction that mood labelers are already familiar with the benefits of emotive writing.

## DISCUSSION

The purpose of this research was to test the utility of an emotive writing intervention to improve athletic performance for athletes who are high mood monitors. As proposed, we demonstrated that the emotive writing procedure (Pennebaker, 1997b) can serve as an intervention to improve performance in athletes with high levels of mood monitoring. Scott et al. (2002) demonstrated that mood monitoring is negatively correlated with athletic performance whereas mood labeling is positively correlated with athletic performance. In a partial replication of this study, the current research provides supporting evidence of a relationship between mood awareness and athletic performance. As predicted, there was a delayed improvement in performance for high mood monitors when given Pennebaker's treatment. Low mood monitoring athletes did not experience a change in performance after the emotive writing intervention. Also as predicted, high mood labelers showed no consistent improvement in athletic performance following the intervention. These findings support Pennebaker's contention that the emotive writing procedure can have powerful effects on behavior and psychological processes. The present study also contributes uniquely to the understanding of limitations of the writing procedure and provides preliminary evidence supporting the contention that personality variables may moderate the effectiveness of the writing process. Lumley, Tojek & Macklem (2003) have described evidence that indicates repressive and alexithymic personalities respond differently to the emotive writing procedure. For example, repressors tend to experience impairment of psychological functioning following emotional disclosure rather than the typical benefit seen with non-repressors. Alexithymics, on the other hand, purportedly due to their inability to become aware of mood states, are unable to follow the simple instruction to write about their emotions with regard to negative events in their lives. This inability to comply with the instructions is reportedly a contributing factor to the failure of alexithymics to experience health benefits from emotive writing procedures (Lumley et al., 2003). These findings were only recently reported, and we are now conducting follow-up research to incorporate the alexithymic and repressive personality constructs into our program of research. This is an important line of research with regard to the present findings because previous research has demonstrated that mood labeling and alexithymia are negatively correlated (Swinkels & Giuliano, 1995), and that relationship may help to tie our own results to a broader theoretical framework.

Despite the contribution of the present study to our knowledge of expressive writing, its relationship to personality, and its impact on athletic performance, the study is not without its methodological limitations, the most prominent of which is the limited sample size. The nature of the population studied (i.e., elite collegiate tennis players), coupled with the necessity of training a limited number of observers to record the matches, prohibited the use of a broader sample and, therefore, necessarily limits the generalizability of the findings. The use of more mainstream methodology (e.g., the true experiment) is prohibited by the nature of the research question. Since we are concerned with the application of a therapeutic treatment to athletic performance, the research question must be examined in the field to make a truly relevant contribution to the literature. Numerous studies examining the impact of emotive writing on psychological processes have already been conducted in the laboratory (Pennbaker, 1997a; 1997b). While the laboratory work has been extremely important and productive, the present study, with its focus on observation of natural behavior in the field, is an important step in broadening the growing knowledge base regarding the impact of emotive writing on various psychological processes and behaviors.

In future research, it might be helpful to turn the level of analysis away from one specific sport in an attempt to determine the impact of the writing procedure on a broader spectrum of athletes. Due to a larger sample size, this level of analysis would facilitate random assignment of athletes to various levels of writing conditions and would allow researchers to explore the generalizability of the writing procedure to other sports. In addition, it is very important to further explore the proposed mechanisms that mediate improved athletic performance, particularly the improved working memory capacity expected as a result of the writing procedure. Our own follow-up research is addressing this question as well.

Despite the methodological concerns outlined above, the present research provides some preliminary evidence that Pennebaker's emotive writing procedure may be differentially beneficial to athletes with different types of mood awareness. These findings are consistent with the theoretical underpinnings of other researchers (Lumley et al., 2003) and the findings of previous research (Scott et al., 2002). Other researchers interested in exploring techniques for improving athletic performance are encouraged to consider exploring the effectiveness of emotive writing in conjunction with appropriate individual difference measures.

## REFERENCES

Klein, K. (2003). Stress, expressive writing, and working memory. In S. Lepore & J. M. Smyth (Eds.), *The writing cure* (pp. 135-155). Washington, D.C.: American Psychological Association.

Kriese, C. (1993). *Winning tennis*. Indianapolis, IN: Master's Press.

Lumley, M. A., Tojek, T. M., & Macklem, D. J. (2003). The effects of written emotional disclosure among repressive and alexithymic people. In S. Lepore

& J. M. Smyth (Eds.). *The writing cure* (pp. 75-95). Washington, D.C.: American Psychological Association.

Nolen-Hoeksema, S. (1990). *Sex differences in depression.* Stanford, CA: Stanford University Press.

Pennebaker, J. W. (1997a). *Opening up: The healing power of expressing emotions.* New York: Guilford Press.

Pennebaker, J. W. (1997b). Writing about emotional experiences as a therapeutic process. *Psychological Science, 8*, 162-166.

Pennebaker, J. W., Hughes, C. F., & O'Heeron, R. C. (1987). The psychophysiology of confession: Linking inhibitory and psychosomatic processes. *Journal of Personality and Social Psychology, 52*, 781-793.

Rees, T., Hardy, L., & Ingledew, D. (2000). Performance assessment in sport: Formulation, justification, and confirmatory factor analysis of a measurement instrument for tennis performance. *Journal of Applied Sport Psychology, 12*, 203-218.

Scott, V. B., Jr. (1999, March). *Rotten moods and brighter days: The benefits of mood labeling,* Southeastern Psychological Association Conference, Savannah, GA.

Scott, V. B., Jr., & McIntosh, W. D. (1999). The development of a trait measure of ruminative thought. *Personality and Individual Differences, 26*, 1045-1056.

Scott, V. B., Jr., Stiles, K., Raines, D., & Koth, A. (2002). Mood, rumination, and mood awareness in the athletic performance of collegiate tennis players. *North American Journal of Psychology, 4*, 457-468.

Silva, J. M. (1984). Personality and sport performance: Controversy and challenge. In J. M. Silva III & R. S. Weinberg (Eds.), *Psychological foundations of sport* (pp. 59-69). Champaign, IL: Human Kinetics Publishers

Swinkels, A. & Giuliano, T. A. (1995). The measurement and conceptualization of mood awareness: Monitoring and labeling one's mood states. *Personality and Social Psychology Bulletin, 21*, 934-949.

---

*Authors' Notes*: This research was funded by a grant from the AASU Research and Scholarship Committee's Faculty Grants Competition. A portion of this research was presented at the 15th Annual Convention of the American Psychological Society in Atlanta, Georgia. We wish to thank Simon Earnshaw, the AASU Head Tennis Coach, Natalia Alekhova , the Assistant Tennis Coach, and the AASU tennis teams for their participation in this research. We also would like to thank William Orkins, Natalie Hankins, and Katie Newman for their assistance in data collection. Finally, thanks to Annie Cardell and Stephen Taylor for their helpful comments on an earlier draft of this article.

## How to Submit Papers to *NAJP*

The submission of good papers is very important to any psychology journal. We hope that you will support our views about what a psychology journal should be like by submitting papers now. We will try to mail a decision on your paper within 5 weeks of receipt by us. We will publish your paper in an average of 5 months of receipt of a final accepted version.

Submit 1 paper copy of each manuscript prepared according to APA guidelines. Also include a diskette with your manuscript or (preferably) e-mail the file to NAJP@mpinet.net. Include 2 large stamped envelopes so we can send your manuscript out for review. We encourage you to have your paper read by peers before submission.

If the final paper is accepted, please send a check or purchase order for the amount specified with your final draft (billed at $25 dollars per typeset page in units of two pages).

Submission of a manuscript to the Journal is a contract to publish with the Journal if the paper is accepted. Because of our rapid editorial feedback, simultaneous submission to other journals is not allowed. We will offer brief comments on the suitability of a topic for publication in *NAJP* before a submission.

Send all correspondence to: *North American* Journal of Psychology, 240 Harbor Dr., Winter Garden, FL 34787, phone 407-877-8364.

---

## SUBSCRIPTIONS

All subscriptions are on a calendar year basis only. If you order late in the year, the earlier issues will be sent to you. Institutional rate, $65. Individual rates, paid by check, $30. Add $7 for Canadian subscriptions. Add $8 for subscriptions outside North America. Phone orders accepted with Visa, MasterCard or American Express. Call 407-877-8364. The *North American* Journal of Psychology is now published in March, June & December.

Visa ☐ AMEX ☐ MC ☐

Card # Exp. Date

Name

Address

City State Zip

## A Summary of Our Philosophy

The ***North American*** **Journal of Psychology** publishes scientific papers that are of general interest to psychologists and other social scientists. Papers may encompass a wide variety of topics, methods, and strategies. It is our belief that many good scientific papers are rejected for invalid reasons. Some journals reject up to 90% of their submissions because they don't have space. Furthermore, studies of the review process strongly suggest that not all of the lucky 10% are better papers than those that get rejected. In our view many of those rejected papers are meritorious with need for only minor revisions. Perhaps our philosophy can be summed up this way: we are looking for ways to strengthen good papers rather than searching for weak excuses to reject them.

**U.S. Department of Education**
*Office of Educational Research and Improvement (OERI)*
*National Library of Education (NLE)*
*Educational Resources Information Center (ERIC)*

ERIC
Educational Resources Information Center

# NOTICE

## Reproduction Basis

☒ This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

☐ This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").

EFF-089 (1/2003)